Level 3 Certificate, Subsidiary Diploma, 90-Credit Diploma, Diploma, Extended Diploma in Countryside Management (0076-03)

Qualification handbook for centres
500/8559/1
500/8560/8
600/6113/3
500/8561/X
500/8489/6
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Level 3 Certificate, Subsidiary Diploma, 90-Credit Diploma, Diploma, Extended Diploma in Countryside Management (0076-03)

Qualification handbook for centres

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1 Introduction to the qualifications

This document contains the information that centres need to offer the following qualifications:

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<th>Qualification accreditation number</th>
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Qualification Summary

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These qualifications meet the needs of learners in a centre-based environment who may wish to work within the countryside management industry or progress to further learning and/or training. These qualifications allow learners to develop underpinning knowledge whilst practising skills that could be used within employment in the countryside management industry. These qualifications replace the Level 3 Advanced National Certificate in Countryside Management (0342-03) which expires on 31 August 2010 (QAN 100/1557/7).

These qualifications were developed in association with Lantra SSC, Landex and the industry.

Specialist Learning (SL)

Specialist Learning (SL) offers young people the opportunity to study a particular topic in more depth or broaden their studies through complementary learning. The Level 3 Certificate and Subsidiary Diploma in Countryside Management have been approved as SL by the Environmental and Land-based Diploma DDP and Ofqual for the Advanced Diploma in Environmental and Land-based Studies. They have been designed to:

- complement principal learning within the Advanced Diploma in Environmental and Land-based Studies
- provide a broad background understanding of the Environmental and Land-based sector and an introduction to the practical skills and knowledge required
- provide an awareness of the range of jobs and work settings in the Environmental and Land-based sector
- enable learners to make an informed assessment of their own aptitude for work in this sector and to make informed decisions about careers
- encourage learners to reach a level of knowledge and skills that will facilitate progress into further vocational learning or to potential employment in the sector
- introduce learners to the discipline of the working environment and to encourage mature attitudes to the community in general
- encourage learners to value continued learning and remain in the learning process
- allow learners to learn, develop and practise selected skills required for progression in the sector
- provide opportunities for progression to the Advanced Diploma in Environmental and Land-based and other related qualifications in the sector.
1.1 Qualification structure

Level 3 Certificate

To achieve the Level 3 Certificate in Countryside Management, learners are required to achieve 30 credits from any of the units.

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<td>Unit 313</td>
<td>Understand and Carry Out Tree Planting, Aftercare and Protection</td>
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To achieve the **Level 3 Subsidiary Diploma in Countryside Management**, learners must achieve 10 credits from the mandatory unit and 50 credits from the optional group. A total of 60 credits must be achieved.

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Level 3 90-Credit Diploma

To achieve the **Level 3 90-Credit Diploma in Countryside Management**, learners must achieve 10 credits from the mandatory unit and 80 credits from the optional group. A total of 90 credits must be achieved.

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Level 3 Diploma

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Level 3 Extended Diploma

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<td>R6009623</td>
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<td>Understanding fishery management</td>
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</table>
1.2 Opportunities for progression
On completion of these qualifications learners may progress into employment or to the following City & Guilds qualifications:

- Level 4 and above centre-based qualifications in Environmental and Countryside Management e.g. Foundation Degree, Higher National Diploma
- Level 3 or 4 work-based qualifications in Environmental and Countryside Management

1.3 Qualification support materials
City & Guilds also provides the following publications and resources specifically for these qualifications:

<table>
<thead>
<tr>
<th>Description</th>
<th>How to access</th>
</tr>
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<tbody>
<tr>
<td>Assignment guide</td>
<td><a href="http://www.cityandguilds.com">www.cityandguilds.com</a></td>
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<tr>
<td>Marking guide</td>
<td><a href="mailto:information@cityandguilds.com">information@cityandguilds.com</a></td>
</tr>
<tr>
<td>Information sheets</td>
<td><a href="http://www.cityandguilds.com">www.cityandguilds.com</a></td>
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<tr>
<td>Fast track approval forms/generic fast track approval form</td>
<td><a href="http://www.cityandguilds.com">www.cityandguilds.com</a></td>
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<tr>
<td>Developing centre devised assessments (for unit 338)</td>
<td><a href="http://www.cityandguilds.com">www.cityandguilds.com</a></td>
</tr>
</tbody>
</table>
2 Centre requirements

This section outlines the approval processes for Centres to offer these qualifications and any resources that Centres will need in place to offer the qualifications including qualification-specific requirements for Centre staff.

Centres already offering the Level 3 Advanced National Certificate in Countryside Management (0342-03)

Centres approved to offer the qualification Level 3 Advanced National Certificate in Countryside Management may apply for approval for the new Level 3 Certificate, Subsidiary Diploma, Diploma and Extended Diploma in Countryside Management using the fast track approval form, available from the City & Guilds website.

Centres may apply to offer the new qualifications using the fast track form

- providing there have been no changes to the way the qualifications are delivered, and
- if they meet all of the approval criteria specified in the fast track form guidance notes.

Fast track approval is available for 12 months from the launch of the qualification. After this time, the qualification is subject to the standard Qualification Approval Process. It is the centre’s responsibility to check that fast track approval is still current at the time of application.

New centres must apply for centre and qualification approval. Further information on this process is available on the City & Guilds website.

Existing City & Guilds /City & Guilds centres that do not offer Level 3 Advanced National Certificate in Countryside Management (0342-03) will need to get specific qualification approval to run these qualifications (contact your City & Guilds Local Office).

2.1 Resource requirements

Human resources

Staff delivering these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be technically competent in the area for which they are delivering training and/or have experience of providing training. This knowledge must be at least to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- be occupationally knowledgeable in the areas of countryside management for which they are delivering training. This knowledge must be at least to the same level as the training being delivered
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and assessor or internal verifier, but must never internally verify their own assessments.

Assessors and internal verifiers

The centre must provide Assessor personnel who must be occupationally competent in the industry either qualified to at least level 3 and/or have current experience of working in the industry at this level.

The centre must provide Internal Quality Assurance personnel who must be occupationally competent in the land-based sector either qualified to at least level 3 and/or have current experience of working in the industry at this level.
Assessors/Internal Quality Assurance personnel may hold relevant qualifications such as D32/33/34 or A1/V1 or TAQA however they are not a mandatory requirement for this qualification. They should have had formal training in assessment/IQA, which may be the qualifications above, or other training that allows the assessor to demonstrate competence in the practice of assessment/IQA. This training may be carried out in-house or with an external agency.

TAQA qualifications are considered very appropriate as Continuing Professional Development (CPD) or as best practice standards for new centre staff to work towards.

**Continuing professional development (CPD)**
Centres are expected to support their staff in ensuring that their knowledge remains current of the occupational area and of best practice in delivery, mentoring, training, assessment and verification, and that it takes account of any national or legislative developments.

### 2.2 Learner entry requirements
There are no formal entry requirements for learners undertaking these qualifications. However, centres must ensure that learners have the potential and opportunity to gain the qualifications successfully.

As part of the assessment for the Level 3 Diploma qualifications that contain work experience as a mandatory unit, learners must have access to a work setting/placement.

**Age restrictions**
These qualifications have been approved/accredited for 16-18, 18+ and 19+ learners. However, there are no age limits attached to learners undertaking the qualification unless this is a legal requirement of the process or the environment.
3 Course design and delivery

3.1 Initial assessment and induction
Centres will need to make an initial assessment of each learner prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

The initial assessment should identify:
• any specific training needs the learner has, and the support and guidance they may require when working towards their qualifications. This is sometimes referred to as diagnostic testing.
• any units the learner has already completed, or credit they have accumulated which is relevant to the qualifications they are about to begin.

City & Guilds recommends that centres provide an induction programme to ensure the learner fully understands the requirements of the qualifications they will work towards, their responsibilities as a learner, and the responsibilities of the centre. It may be helpful to record the information on a learning contract.

3.2 Recommended delivery strategies
Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

Centres may design course programmes of study in any way which:
• best meets the needs and capabilities of their learners
• satisfies the requirements of the qualifications.

When designing and delivering the course programme, centres might wish to incorporate other teaching and learning that is not assessed as part of the qualifications. This might include the following:
• Functional skills
• Personal learning and thinking (PLTS)

Where applicable, this could involve enabling the learner to access relevant qualifications covering these skills.
4 Assessment

4.1 Summary of assessment methods
For these qualifications, learners will be required to complete the following assessments:

- **one** assignment for **each** unit

City & Guilds provides the following assessments:

- Assignment guide containing assignments for each unit 301-337
- Guidelines for developing the centre devised assessment for unit 338

Time constraints
The following time constraints must be applied to the assessment of these qualifications:

- All assignments must be completed and assessed within the learner’s period of registration. Centres should advise learners of any internal timescales for the completion and marking of individual assignments.

4.2 Assignments
The assignment guide for these qualifications and the guidelines for developing the centre devised assessment for unit 338 are available to download from www.cityandguilds.com.

4.3 Recognition of prior learning (RPL)
Recognition of Prior Learning (RPL) recognises the contribution a person’s previous experience could contribute to a qualification. RPL is allowed and is also sector specific.

4.4 Resubmission of Assignments
Centres are advised to adopt the following policy on the re-submission of work:

Learners who fail an assignment on the formal (summative) submission, or who would like the opportunity to improve their grade, may re-submit once only and may then achieve either a Pass, Merit or Distinction as appropriate. An appropriate time period between formal submission and re-submission should be set by the centre. Multiple re-submissions are not permitted. Learners who fail to hand in work on the formal submission date, where there is no legitimate reason, should be capped to a maximum of a Pass grade only at the re-submission stage. It is at the discretion of the centre to set informal (formative) submission dates, if appropriate, and a formal submission date.
## 5 Units

### Summary of units

<table>
<thead>
<tr>
<th>City &amp; Guilds unit number</th>
<th>Title</th>
<th>QCF unit number</th>
<th>Credits</th>
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<td>Undertake and Review Work Related Experience in the Land-based Industries</td>
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<td>Unit 302</td>
<td>Understand the Principles and Carry out the Practice of Wildlife Populations, Ecology and Conservation</td>
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<td>Undertake Estate Skills</td>
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<td>Unit 305</td>
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<td>Unit 306</td>
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<td>Unit 310</td>
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**Certification/grading modules**

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<tr>
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</table>
6 Registration and Certification

The Level 3 Certificate, Subsidiary Diploma, 90-Credit Diploma, Diploma and Extended Diploma in Countryside Management qualifications have been grouped into one programme for registration.

Tutors and Examination Officers should ensure that learners are registered onto 0076-03 and that all 0076-03 documentation for teaching and administration with City & Guilds is used.

When learners' results are submitted to City & Guilds, centres should also submit the relevant Certificate, Subsidiary Diploma, Diploma and Extended Diploma certification/grading component, according to which units the learner has achieved, so that the appropriate certificate is generated. The overall grade can be calculated using the formula in the assignment guide.

Please note: There are four certification/grading modules for each of the qualifications which differentiates the four grades – pass, merit, distinction and distinction*. Once the overall grade for the assignments has been calculated, the correct certification/grading module needs to be indicated on the results entry.

For example, if a learner achieves the Level 3 Certificate in Countryside Management at an overall merit grade, then the certification module 911 needs to be submitted. Please see the Rules of Combination below or the City & Guilds catalogue.

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<td>Rules for achievement of qualification</td>
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<td>QAN 500/8560/8</td>
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Rules for achievement of qualification

10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345)
Plus 913 for certification at pass grade

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Rules for achievement of qualification

10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345)
Plus 914 for certification at merit grade

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Rules for achievement of qualification

10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345)
Plus 915 for certification at distinction grade

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Rules for achievement of qualification

10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345)
Plus 926 for certification at distinction* grade

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<th>Level 3 90-Credit Diploma in Countryside Management</th>
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Rules for achievement of qualification

10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345)
Plus 957 for certification at pass grade

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Rules for achievement of qualification

10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345)
Plus 958 for certification at merit grade

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Rules for achievement of qualification

10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345)
Plus 959 for certification at distinction grade

Level 3 Certificate, Subsidiary Diploma, 90-Credit Diploma, Diploma, Extended Diploma in Countryside Management (0076-03)
### Level 3 90-Credit Diploma in Countryside Management

**QAN 600/6113/3**

**Rules for achievement of qualification**
- 10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345)
- Plus 960 for certification at distinction* grade

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### Level 3 Diploma in Countryside Management

**QAN 500/8561/X**

**Rules for achievement of qualification**
- 40 credits from (301 – 304), plus a minimum of 80 credits from (305–345)
- Plus 916 for certification at pass grade

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### Level 3 Diploma in Countryside Management

**QAN 500/8561/X**

**Rules for achievement of qualification**
- 40 credits from (301 – 304), plus a minimum of 80 credits from (305–345)
- Plus 917 for certification at merit grade

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### Level 3 Diploma in Countryside Management

**QAN 500/8561/X**

**Rules for achievement of qualification**
- 40 credits from (301 – 304), plus a minimum of 80 credits from (305–345)
- Plus 918 for certification at distinction grade

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### Level 3 Extended Diploma in Countryside Management

**QAN 500/8489/6**

**Rules for achievement of qualification**
- 40 credits from (301 – 304) plus a minimum of 140 credits from (305–345)
- Plus 919 for certification at pass grade

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### Level 3 Extended Diploma in Countryside Management

**QAN 500/8489/6**

**Rules for achievement of qualification**
- 40 credits from (301 – 304) plus a minimum of 140 credits from (305–345)
- Plus 920 for certification at merit grade
Level 3 Extended Diploma in Countryside Management
QAN  500/8489/6

Rules for achievement of qualification

40 credits from (301 – 304) plus a minimum of 140 credits from (305–345)
Plus 921 for certification at distinction grade

Level 3 Extended Diploma in Countryside Management
QAN  500/8489/6

Rules for achievement of qualification

40 credits from (301 – 304) plus a minimum of 140 credits from (305–345)
Plus 928 for certification at distinction* grade

- Learners must be registered at the beginning of their course. Centres should submit registrations using Walled Garden or Form S (Registration), under scheme/complex 0076-03.

- When assignments have been successfully completed results should be submitted on Walled Garden or Form S (Results submission). One of the certification/grading modules 910 to 921 or 925 to 928 or 957 to 960 need to be submitted to generate the appropriate certificate and grade. Centres should note that results will not be processed by City & Guilds until verification records are complete.

- Learners achieving one or more assessment components will receive a Certificate of Unit Credit listing the assessment components achieved. Learners achieving the number and combination of assessment components required to meet a defined Rule of Combination will, in addition, be issued with a certificate. Centres must submit a certification/grading component to allow this to happen.

Full details on the procedures for all City & Guilds qualifications registered and certificated through City & Guilds can be found on the City & Guilds on-line catalogue.
Unit 301  Undertake and Review Work Related Experience in the Land-based Industries

Level: 3

Credit value: 10

Unit aim:
The aim of this unit is to give learners the skills needed to identify, participate in and review work experience in the environmental and land-based sector. The unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Understand the opportunities in the environmental and land-based industries
2. Be able to prepare for a work-based experience in the environmental and land-based industry
3. Be able to undertake a work-based experience in the environmental and land-based industry
4. Be able to review a work-based experience in the environmental and land-based sector

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
n/a

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge
Unit 301  
**Undertake and Review Work Related Experience in the Land-based Industries**

**Outcome 1**  
Understand the opportunities in the environmental and land-based industries

**Assessment Criteria**

The learner can:

1. Evaluate **career and progression opportunities** within an environmental and land-based industry

**Unit content**

**Career and progression opportunities**

Job roles relevant to the sector: managerial, supervisory, team worker, trainee, volunteer, common job titles within the relevant sector, main duties and responsibilities

Skills needed to fulfil duties and responsibilities of appropriate jobs: job specific, vocational and personal

Progression pathways from trainee or team worker positions to supervisory and management posts. Skills, qualifications and experience required to achieve career progression

Evaluate career and progression opportunities: advantages and disadvantages of identified pathways, suitability to personal interests, skills and qualifications, role of work experience in preparing for a selected career
Unit 301  Undertake and Review Work Related Experience in the Land-based Industries

Outcome 2  Be able to prepare for a work-based experience in the environmental and land-based industry

Assessment Criteria
The learner can:
1. Select an appropriate work-based experience and complete the application process
2. Demonstrate interview skills as an interviewee
3. Prepare for a work-based experience, identifying targets, aims and objectives

Unit content

Select
Suitable work experience position based on existing skills, experience, qualifications, development of skills and experience to achieve future employment goals

Application process
Finding suitable job opportunities from e.g. trade magazines, websites, employer approaches to the centre, completion of an application form, curriculum vitae and letter of application

Interview skills
Interview preparation: Research the business and job role, suitable dress and personal presentation, information to find out and suitable questions to ask. Interview performance: attend punctually and dressed appropriately, answering questions, completion of other tests (e.g. practical, aptitude), and reflection on interview performance

Targets, aims and objectives
Aims: overall impact of work experience on skills, experience, future employability, targets / objectives, specific development of workplace skills and knowledge (e.g. technical, vocational, business, team working, communication and employability)
Unit 301  
**Undertake and Review Work Related Experience in the Land-based Industries**

Outcome 3  
Be able to undertake a work-based experience in the environmental and land-based industry

**Assessment Criteria**

The learner can:

1. **Undertake** a selected appropriate work-based experience
2. Maintain a **record of activities and achievements** during a work-based experience

**Unit content**

**Undertake**

Completion of 300 hours of appropriate work experience, attend punctually and reliably, work competently and in line with job role requirements, health and safety, security, confidentiality, effective working relationships with colleagues, supervisors and customers.

**Record of activities and achievements**

Job description for work role, main duties and responsibilities, regular daily working routine, diary of additional tasks, duties, learning experiences portfolio of work experience (e.g. photographs, witness statements, work experience provider’s or assessor’s reports, progress reviews)
Unit 301  Undertake and Review Work Related Experience in the Land-based Industries

Outcome 4  Be able to review a work-based experience in the environmental and land-based sector

Assessment Criteria
The learner can:
1. **Present evidence** of activities and achievements during a work-based experience
2. **Review** a work-based experience, identifying strengths and areas for improvement

Unit content

**Present evidence**
Name of work experience provider, nature of the organisation (type of business, products or services, customers), organisation structure chart, job description for work role, main duties and responsibilities, regular daily working routine, health, safety and welfare of employees, customers, animals, diary of additional tasks, duties, learning experiences, portfolio of work experience (e.g. photographs, witness statements, work experience provider’s or assessor’s reports and progress reviews)

**Review**
Business effectiveness: products and services, physical resources (e.g. buildings, machinery, equipment), business procedures, staff management and supervision, employees’ skills and development, marketing and customer relations, personal workplace effectiveness: work speed, work quality, punctuality, attendance, reliability, dress and personal presentation, working relationships with peers, working relationships with supervisor, work experience aims, objectives and targets, impact of work experience on future career ambitions
Unit 301 Undertake and Review Work Related Experience in the Land-based Industries

Notes for guidance

Learners on vocational courses should have experience of the type of work that they hope to do, and of the expectations of potential future employers. Many Level 3 learners are likely to have already had experience of working in the land-based and environmental industries, so this unit seeks to provide new experience opportunities for these learners.

Ideally this unit should be undertaken in a real business environment relevant to the subject interest of the learner, but actual work experience may be gained by a number of routes, e.g. as part of an industrial placement whilst within the programme, whilst working on a planned daily or weekly basis on the centre’s commercial and/or educational facilities, whilst undertaking voluntary work within the industry, as previous relevant and current work experience in the industry or as a member of a group of learners invited to carry out practical work on a suitable business.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Learners should complete the equivalent of 8 weeks (or 300 hours) work experience to achieve this unit. If work experience is in the industry, centres should be mindful of their responsibilities for ensuring that work placements have appropriate supervision, insurance and health and safety policies in place.

In Outcome 1, learners will explore the different job roles and responsibilities, and the job titles commonly associated with them in their specialist sector. This background understanding is likely to require some formal classroom teaching, and may be closely linked to material in the unit “Business Management”. Learners should be encouraged to explore the range of employment opportunities and career paths within their specialist sector. It would be appropriate for employers to be invited to outline to learners their expectations in the workplace. Learners will then consider the skills and qualifications that are required for appropriate jobs for themselves and should be encouraged to think about skills and qualifications that they may need to acquire to achieve their employment and careers ambitions. Evaluation of career and progression opportunities should include advantages and disadvantages of at least 3 possible career pathways within their specialist sector. This should help them to identify suitable work experience.

Outcome 2 involves learners going through the process of applying for work experience. They will need to locate suitable job adverts or work experience opportunities, but can be supported by centres suggesting suitable placements. When applying for work experience learners should produce, as a minimum, a detailed curriculum vitae and letter of application using a computer. Learners may need to be given supported workshop time on computers to develop these documents. Before attending for a work experience interview it would be appropriate for learners to role play an interview and be given feedback on their interview technique. After attending for an interview they should reflect on their performance and how they could improve their effectiveness. Before commencing work experience they should set overall aims to be achieved during the period and SMART (specific, measurable, achievable, realistic, timescaled) targets or objectives for learning and improvement in relation to future career aims.

Outcome 3 requires that learners effectively complete their period of work experience, meeting the requirements of the workplace appropriate for their position. It would be advisable for their progress to be reviewed at least once during the period and they should have access to tutor support in case of difficulties arising. During their work placement learners must produce the details of their job role and working routine, maintain a diary at least weekly and collate other relevant information on their work placement, performance
and achievements. It would be appropriate for tutors to complete a report in consultation with the work experience provider mid-way and at the end of the placement.

In Outcome 4, learners will use evidence from outcome 3 to present a report, oral and/or written, on their work experience business, job role, learning and achievements. They will then review the effectiveness of the workplace, making realistic and justified suggestions for improvement. Review of their own workplace performance and achievements should include all of the content identified, with reference to relevant evidence, e.g. reports, progress reviews, and the extent to which their aims, objectives/targets have been achieved. Learners should consider further training and experience that will help them to achieve their career ambitions.
Unit 302  Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Level:  3

Credit value:  10

Unit aim

This unit aims to provide learners with an understanding of the principles of wildlife populations, ecology and conservation and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The unit aims to enable the learner to be able to identify and conduct surveys of wildlife habitats and ecosystems. It will consider fluctuations in ecosystems and the reasons for these fluctuations, both natural and human influenced. Learners will also understand the wildlife populations within ecosystems, the interactions between these and the conservation strategies used to preserve ecosystems.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand changes in global ecosystems
2. Understand national and international conservation strategies for wildlife and their habitats
3. Understand population dynamics
4. Be able to conduct a field study of habitats and wildlife populations

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC2 Survey and report on the condition of the environment
EC6 Communicate environmental information
EC23 Prepare, conduct and report on field surveys

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge
Unit 302  Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 1  Understand changes in global ecosystems

Assessment Criteria
The learner can:
1. Explain **global changes** in ecosystems
2. Illustrate **wildlife population changes** in ecosystems
3. Assess **reasons for global wildlife population fluctuations**

Unit content

**Global changes**
Population shifts, trends, speciation, scales, individuals, species, communities, ecological niches, demes, climate change, drought, famine

**Wildlife population changes**
Metapopulations, seasonality, growth, dissolution, dispersal, genetic variability, continuity in time, fecundity, natality, mortality

**Reasons for global wildlife population fluctuation**
Seasonality, migration, emerging diseases, climate change, habitat destruction, influence of man
Unit 302  Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 2  Understand national and international conservation strategies for wildlife and their habitats

Assessment Criteria
The learner can:
1. Review national conservation strategies for wildlife and their habitats
2. Discuss international conservation strategies for wildlife and their habitats

Range
Conservation strategies: in situ and ex situ conservation

Unit content

National conservation strategies

International conservation strategies
Unit 302  Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 3  Understand population dynamics

Assessment Criteria
The learner can:
1. Explain predator prey interactions within wildlife populations
2. Discuss types of evolution within animal populations

Unit content

Principles of population dynamics
Growth, dispersion, genetic variability, continuity in time, factors that influence population, size, form, resources, demes, fluctuations, fecundity, natality, mortality, immigration, emigration, breeding strategies (r and K)

Predator prey interactions
Positive and negative interactions, primary consumers, secondary consumers, parasite: host, natural selection, hunting strategies, predation theories, predator density and prey density, prey defences

Types of evolution
Divergent, convergent, parallel
Unit 302  

Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 4  
Be able to conduct a field study of habitats and wildlife populations

Assessment Criteria
The learner can:
1. **Plan an ecological survey** of habitats
2. Carry out an **ecological survey** of habitats
3. Carry out a **wildlife population survey**

Unit content

Plan an ecological survey
Objective setting and planning, risk assessment, health and safety, legislation, codes of practice

Ecological survey
Sampling (quadrat, kick, transect), data analysis methods

Wildlife population survey
Phase 1 surveys, habitat surveys, species surveys
Unit 302  
**Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation**

**Notes for guidance**

This unit is designed to provide an overview of the principles of ecology and conservation that influence wildlife populations at a National and International level.

The unit should consider a range of wildlife populations in a variety of habitats (mammals, reptiles, amphibians, invertebrates, birds) within the British Isles and on the International stage. It should aim to incorporate historic, current and emerging issues in wildlife population dynamics and conservation to enable the learner to fully develop a worldwide perspective on conservation issues and strategies developed to counteract them.

Throughout the unit the emphasis should be on the contextualisation of the principles of population dynamics discussed into real world examples to enable the learner to fully engage with the concepts discussed and current issues. Safe working practices and compliance with relevant legislation, codes of practice and health and safety should be emphasised before and during practical surveying.

Outcome 1 encourages the identification and exploration of global and national ecosystems and to identify how these have and are currently evolving. Specific emphasis should be given to changes in wildlife population changes and the potential abiotic and biotic factors that produce these fluctuations. Delivery is expected to be formal but should be complimented by the inclusion of interactive resources including videos and case studies to encourage the learner to contextualise.

In Outcome 2, the learner will develop an understanding of both National and International conservation strategies. Delivery should provide an overview of historic and current strategies and how these interlink. Learners should be encouraged to apply conservation strategies to biodiversity action plans and conservation objectives, and should be able to discuss their potential impact. Delivery is envisaged to be a combination of formal and interactive sessions, and the inclusion of guest speakers or case studies which can contextualise conservation strategies is to be encouraged.

Outcome 3 encourages the exploration of the principles of population dynamics and should be discussed with reference to a range of examples, and should include consideration of the interrelationship of plant and animal (mammals, birds, invertebrate, amphibian and reptile) species. The learner will explore evolutionary strategies to propose how current population dynamics have formed. Delivery is expected to be formal but should be complimented by practical activities, videos and case studies to encourage the learner to contextualise the factors covered. Current and topical issues in population dynamics and conservation should be highlighted.

Outcome 4 continues with the development of practical ecological surveying skills. Practical field study opportunities to develop core skills are necessary to compliment formal delivery. A range of habitats that incorporate access to numerous wildlife species should be available for study and a variety of sampling methods practically undertaken. Learners should be encouraged to plan, undertake and reflect on sampling in reference to method, sources of error, results, conclusions drawn, legislation and health and safety.

Learners working towards Level 3 are expected to have underpinning knowledge in British wildlife and plant identification and should be able to relate this to ecological surveying: Personal interest in current and emerging issues in conservation is envisaged. The unit aims to build upon foundation knowledge to discover the complex relationships that exist within global ecosystems in the natural world and how these influence population dynamics. Learners are required to be able to review ecosystems and to formulate possible
explanations for current population dynamics and trends within these. The learner will develop knowledge of the application of conservation strategies for wildlife and habitat preservation at both a national and international level. It is expected that delivery will be formal but emphasis should be placed on the development of practical surveying skills and ability to interpret the results of surveys and contextualise these into short and long term impacts on populations and ecosystems. It is important that the learner understands the influence of legislation, codes of practice and health and safety in respect of ecological surveying.

Centres are encouraged to introduce case studies from real environments and guest speakers from relevant industries e.g. Wildlife Trust to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of habitats to add depth to the learner experience. It is accepted that formal lectures will be necessary at Level 3 but for this unit it is necessary to compliment this with practical opportunities and recommended to introduce interactive sessions in a real environment and integrate the appraisal of population case studies with respect to conservation at both national and international levels.

References

Books


Journals

Journal of Ecology
Ecology
Behavioural Ecology
Ecologist
BBC Wildlife
Birds
Forest Life
Shooting and conservation

Websites

www.ecology.com
www.nhm.ac.uk/research-curation/projects/worldmap
www.globalissues.org.uk
www.ukbap.org.uk
Unit 303  
Undertake Estate Skills

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the estate skills and knowledge and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or into further/higher education.

The learner will look at constructing, repairing and maintaining boundaries, structures and surfaces. They will build their experience and confidence in using practical skills in a range of situations. The learner will be able to contextualise practical management work to a particular habitat that lies within their primary area of learning.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Be able to construct, repair or maintain boundaries
2. Be able to construct, repair or maintain structures
3. Be able to construct, repair or maintain surfaces
4. Be able to carry out practical habitat management work

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU22.1 Construct maintain and repair boundaries
CU20.1 Maintain structures and surfaces

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SCC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge
Unit 303  Undertake Estate Skills
Outcome 1  Be able to construct, repair or maintain boundaries

Assessment Criteria
The learner can:
1. Prepare the site appropriately
2. Select appropriate equipment and materials
3. Carry out the construction, repair or maintenance of selected boundaries to meet given specifications

Range

Boundaries
Living boundaries (hedge, bank, ditch), constructed boundaries: fence (post and rail, post and wire, electric, netting), wall (stone, brick)

Unit content

Prepare the site
Plan activity, clear debris, ensure livestock safety, location (power supply, waste disposal, equipment and materials storage)

Equipment and materials
Materials selected relevant to task, health and safety, sustainable practice, cost implications

Construction, repair or maintenance
Undertaken safely (use of risk assessment, appropriate Personal Protective Equipment (PPE)) and to the required standards
Unit 303  Undertake Estate Skills
Outcome 2  Be able to construct, repair or maintain structures

Assessment Criteria
The learner can:
1. **Prepare the structure** appropriately
2. Prepare and ready appropriate **equipment and materials**
3. Carry out the **construction, repair or maintenance** of selected **structures** to meet given specifications

Range

Structures
Wooden structures (gate, stile, horse jump, bird box, table, bench, door), other structures requiring repair or maintenance (animal house or pen, machinery or feed store)

Unit content

**Prepare the structure**
Cut required sizes, wood preparation (sanding, planing, filling), check design specification, plan activity

**Equipment and materials**
Equipment and materials prepared based on manufacturer instructions, health and safety, sustainable practice, cost implications

**Construction, repair or maintenance**
Undertaken safely (use of risk assessment, appropriate Personal Protective Equipment (PPE)) and to the required standards
Unit 303 Undertake Estate Skills
Outcome 3 Be able to construct, repair or maintain surfaces

Assessment Criteria
The learner can:
1. **Prepare the surface** appropriately
2. Prepare and ready appropriate **equipment and materials**
3. Carry out the **construction, repair or maintenance** of a selected **surface** to meet given specifications.

Range

Surface
Solid (decking, concrete, paving), Loose (gravel, wood chippings, sand)

Unit content

**Prepare the surface**
Plan activity, clear debris, ensure livestock safety, location (power supply, waste disposal, equipment and materials storage)

**Equipment and materials**
Equipment and materials prepared based on manufacturer guidelines, health and safety, sustainable practice, cost implications, timeliness for example preparing concrete at the right time for construction

**Construction, repair or maintenance**
Undertaken safely (use of risk assessment, appropriate Personal Protective Equipment (PPE)) and to the required standards
Unit 303 Undertake Estate Skills
Outcome 4 Be able to carry out practical habitat management work

Assessment Criteria
The learner can:
1. Carry out appropriate risk assessments
2. Safely carry out appropriate practical habitat management to given specifications
3. Recommend improvements for future work

Unit content

Risk assessments
Risk assessments completed and used, use of Personal Protective Equipment (PPE) appropriate to the tasks (safety boots, overalls, gloves, and eye protection), and safe methods of working

Practical habitat management
Mowing, renovation, planting and staking as applicable, clearing (path, fence line), coppicing, uprooting, hedge maintenance, pruning, thinning, cutting or mowing and mulching, pond, stream and ditch clearance
Good practice: composting, materials that can be composted, re-used and/or recycled, finding alternative uses, methods of recycling, avoid wastage
Reduce environmental damage - Pollution (water courses, through litter or debris, noise), damage to habitats, and wastage of resources
Disposal of waste: organic waste (recycling, composting, chipping, burning), inorganic waste (recycling, landfill, discarding safely)

Improvements
Setting habitat management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements
Unit 303  Undertake Estate Skills

Notes for guidance

This unit has a very practical focus, and aims to enable learners to develop estate skills which can be applied to a range of situations and circumstances. The unit has been written such that naturally occurring and locally relevant opportunities can be used in selecting sites, structures and surfaces to construct, repair or maintain.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate personal protective equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Learners should also be made aware of the impact on the environment, and sustainability concepts should also be demonstrated where possible.

Learners should have the opportunity to undertake estate skills activity in a land-based setting wherever possible to maximise the vocational relevance. It will be most beneficial if the structures, boundaries and surface selected are for a clear purpose above and beyond delivery of this unit. It is recognised that there will not be opportunities to carry out construction, repair and maintenance in each of the categories, but it would be appropriate for the skills of construction, repair and maintenance to each be developed in one aspect of the unit.

In Outcome 1, learners will develop the practical skills needed to construct, repair or maintain at least two different boundaries, including a living boundary and a constructed one.

In Outcome 2, learners will construct, repair or maintain at least two different structures. It is anticipated that learners will develop an understanding of how to construct a wooden structure, but are not expected to be able to construct larger structures such as animal or machinery housing. It is anticipated that delivery will include repair and maintenance of such larger structures as would be found in an estate setting.

In Outcome 3, learners are required to construct, repair or maintain one surface from the range shown. Delivery may include visits to see a range of surfaces and their properties and maintenance requirements.

In Outcome 4 it is anticipated that delivery of this outcome will be embedded in the practical skills development within the other three outcomes. These outcomes could also be developed in conjunction with learners' work experience at an appropriate placement.

It is anticipated that most delivery of this unit will take place in a practical setting, with supervised practice of skills. Delivery will also include some classroom based activity in ensuring learners have a good understanding of planning, materials selection and preparation, and underpinning knowledge.

References

Books


**Journals**

Ecology
Environmental Management
Farmers Guardian
Farmers Weekly
Landwards
Organic Farming

**Websites**

www.btcv.org.uk British Trust for Conservation Volunteers
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.fwag.org.uk Farm Wildlife and Advisory Group
www.hse.gov.uk Health and Safety Executive
www.lantra.co.uk Lantra Sector Skills Council
Unit 304  Undertake an Investigative Project in the Land-based Sector

Level: 3
Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of undertaking an investigative project and how this can be put into practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or to further education and training.

The learner will develop project knowledge and skills by investigating a chosen topic area through a project. They will explore topic areas that interest them and select one topic for their investigative project. They will plan and carry out their investigative project working to meet deadlines and monitoring performance. The learner will prepare an evaluative report looking at how the project performed, if the schedule plan met the project aims and objectives and how improvements could be made in the future.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Be able to identify and research a suitable topic for an investigative project in the environmental and land-based sector
2. Be able to plan for an investigative project in the environmental and land-based sector
3. Be able to carry out an investigative project in the environmental and land-based sector
4. Be able to report on an investigative project in the environmental and land-based sector

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge
Unit 304 Undertake an Investigative Project in the Land-based Sector

Outcome 1 Be able to identify and research a suitable topic for an investigative project in the environmental and land-based sector

Assessment Criteria
The learner can:
1. List information sources relevant to the topic to be researched
2. Carry out research into potential topics
3. Select and describe a relevant investigative project topic in the environmental and land-based sector
4. Prepare a proposal for an investigative project

Range
The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

Information sources
For example textbooks, journals, magazines, internet, trade literature, television and radio, subject experts, validity and reliability

Research
Methods appropriate to the project, e.g. literature review, trials, experiments, practical activities, questionnaires, interviews, surveys

Select and describe
Suitable project topic (e.g. trial or experiment, investigation of an issue important to the sector, preparation of a plan, production of a structure or artefact, training programme, preparation for and participation in a competition, improving a process, investigation of a new product or service). Justify the selection of the project topic in relation to e.g. programme of study, interests and experience, future employment ambitions, comparison with alternative topics

Prepare a proposal
Title, aims/ objectives, methodology, information sources, resources (e.g. people, computers, materials, etc. required for completion of the project), justification of proposed project
Unit 304  Undertake an Investigative Project in the Land-based Sector

Outcome 2  Be able to plan for an investigative project in the environmental and land-based sector

Assessment Criteria
The learner can:
1. **Plan operations and resources** required to carry out a selected investigative project in the environmental and land-based sector
2. **Explain the reasons** for resources selected

Range
The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

Plan operations
Project planning techniques (e.g. critical path analysis, Gantt charts), sequencing of activities, working to deadlines, allowing for other commitments, project action plan: aims, objectives, specific operations / tasks, start and completion dates, time required, resources required, possible disruptions to plan (e.g. illness, other commitments, resource problems, IT problems, research problems, lack of cooperation, cost), contingencies and remedial actions

Resources
People, time, buildings, equipment, animals, materials, literature and media (internet, trade magazine), IT applications and budget

Reasons
Suitability, availability and cost
Unit 304  Undertake an Investigative Project in the Land-based Sector

Outcome 3  Be able to carry out an investigative project in the environmental and land-based sector

Assessment Criteria
The learner can:
1. Carry out a selected investigative project in the environmental and land-based sector
2. Monitor progress, working to deadlines
3. Discuss the health and safety implications of the investigative project

Range
The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

Carry out a selected investigative project
Suitable project as proposed in outcome 1 (trial or experiment, investigation of an issue important to the sector, preparation of a plan, production of a structure or artefact, training programme, preparation for and participation in a competition, improving a process, investigation of a new product or service). Implementation (set up, start), operations (tasks, duties), evidence of actions e.g. literature review, artefacts, plans, presentations, witness statements, photographs or videos

Monitor progress
Diary or log of actions, monitoring of performance against schedule plan e.g. daily, weekly, monthly progress, budget, other appropriate measures for each resource or task, reasons and remedial actions if falling behind schedule

Deadlines
Interim, key mileposts, final, all to be reviewed at regular intervals by tutor

Health and safety implications
Health and safety, risk assessment, Personal Protective Equipment (PPE), relevant regulations and legislation, animal welfare, codes of practice
Unit 304  Undertake an Investigative Project in the Land-based Sector

Outcome 4  Be able to report on an investigative project in the environmental and land-based sector

Assessment Criteria
The learner can:
1. **Report** on a selected investigative project in the environmental and land-based sector
2. **Evaluate achievements and areas for improvement** of a selected investigative project

Range

The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

**Report**
Report on the project selected and completed in outcomes 1-3. Written report format, oral report presentation, title, aims/objectives, review of existing literature/information, methodology, results/findings (with appropriate evidence, e.g. charts and graphs, diagrams, photographs), conclusions, Harvard referencing

**Evaluate achievements**
Conduct and management of the project, action plan, keeping to deadlines, problems and remedial actions, project results/findings, strengths and weaknesses

**Areas for improvement**
Planning, implementation, methodology, results/findings, report, topics for further investigation
Unit 304  
Undertake an Investigative Project in the Land-based Sector

Notes for guidance

This unit is designed to encourage and develop independent research skills in learners provides valuable skills development for all level 3 learners and especially those looking to progress onto Higher Education. The concept of the project is applicable across all of the vocational areas in the environmental and land-based sector, and learners should be guided and encouraged to select a project topic that is particularly relevant to their interests. This could integrate with other units in their programme of study. The emphasis of the unit should be on project management and working to deadlines, as well as producing a meaningful investigative project. Much of the work will be carried out independently by learners but they must have access to appropriate tutor guidance and support.

In Outcome 1, learners will need to identify a suitable topic for their investigative project. This should be relevant to their programme of study and have a particular interest for them, for example in relation to a special area of interest, experience or future employment of study ambitions. Ideal project topics could have a practical or theoretical focus, but all projects should include potential for research into existing literature and information sources as well as a practical investigation or application, so should be chosen in agreement with the tutor. Learners are likely to need guidance on suitable project topics and tutor support to ensure that selected topics are achievable in the timescale and with the resources available. The proposal should outline the aims and objectives, information sources, resource requirements, and the methodology by which the learner intends to complete the project, as well as their justification for topic selection. If appropriate to the investigation, a hypothesis should be included as part of the methodology.

In Outcome 2, learners will need to complete a detailed action plan for completion of the investigative project within the set timescale. This should include, as a minimum:
- a detailed breakdown of all actions from starting the project up to submission of the completed project report
- resources required at each stage (and reasons for their selection)
- time expected for completion and interim target completion dates.
They should also consider possible setbacks to their planned schedule and contingency plans to ensure timely completion of the project. Learners are likely to require guidance on project planning techniques and how to compile an appropriately detailed action plan. They could be provided with a suitable template.

In Outcome 3, learners will conduct and complete their investigative project, collecting supporting evidence as appropriate, for example literature review, artefacts, witness statements, photographs or videos, etc. Whilst doing this, they should maintain a log or diary of all actions, and regularly monitor their progress against their action plan. It would be appropriate for tutors to conduct progress reviews at key stages of the project. As part of conducting the project, learners should discuss any health and safety implications of their work to humans and, if appropriate, animals, and identify any relevant legislation or codes of practice. Risk assessments may contribute to evidence of this.
In Outcome 4, learners will produce a summary report of their project and the process of its completion. This should cover, as a minimum:

- title
- aims / objectives
- review of existing literature / information
- methodology
- results / findings
- conclusions
- references

All referencing should comply with academic conventions, and learners should be given appropriate guidance on this.

The project evaluation should consider the strengths and weaknesses of the finished project and the process of its completion, the usefulness and importance of project planning, and ways in which the project could have been improved.

Some parts of the project report could be presented orally rather than in written report format.

References

Books


Unit 305  Understanding Principles of Physical and Biological Environmental Processes

Level: 3
Credit value: 10

Unit aim
This unit aims to provide learners with an understanding of the principles of physical and biological environmental processes. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Those involved in managing and conserving the countryside must have a knowledge and understanding of environmental processes and the environmental impacts of human activities. The learner will study physical and biological processes that maintain life on earth and how humans affect them. They will study environmental systems of the earth's atmosphere, lithosphere, biosphere and hydrosphere.

Learning outcomes
There are four learning outcomes to this unit. The learner:
1. Understand the scientific principles and processes that influence energy transfer and the atmosphere as part of the earth atmosphere system
2. Understand the physical and biological processes within the lithosphere
3. Understand the physical and biological processes within the biosphere
4. Know how water is used and managed within the hydrosphere

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
n/a

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 305  
Understanding Principles of Physical and Biological Environmental Processes

Outcome 1  
Understand the scientific principles and processes that influence energy transfer and the atmosphere as part of the earth-atmosphere system

Assessment Criteria
The learner can:
1. Explain the scientific principles and processes that influence the **climate** in the earth-atmosphere system
2. Explain the scientific principles and processes that influence the **transfer of energy** in the earth-atmosphere system

Unit content

**Climate**
Statistics of temperature, humidity, atmospheric pressure, wind, rainfall, atmospheric particle count and numerous other meteorological elements in a given region over long periods of time
The Köppen climate classification scheme, The Holdridge life zones system

**Transfer of energy**
Conduction, convection, radiation and condensation: ocean currents, wind, solar activity, volcanic, magnetic
Unit 305  Understanding Principles of Physical and Biological Environmental Processes

Outcome 2  Understand the physical and biological processes within the lithosphere

Assessment Criteria
The learner can:
1. Examine the origins and characteristics of rocks
2. Explain factors affecting soil composition and formation
3. Outline the distribution of selected soil types found in the British Isles

Unit content

Origins
Sedimentary (gradual accumulation of sediment for example sand on a beach, mud on a river beds, lithification), metamorphic (previously igneous or sedimentary, subject to pressure and heat for example mountains), igneous (from magma for example mid-ocean ridges, volcanoes)

Composition
Soil particles: clay, sand, silt, organic matter

Formation
Soil profile diagrams: profile diagram showing soil horizons (topsoil, subsoil, parent, bedrock)
Processes: leaching, eluviation, illuviation, podsolisation, gleying

Distribution
Rocks, soil, geographical locations in the British Isles
Unit 305  Understanding Principles of Physical and Biological Environmental Processes

Outcome 3  Understand the physical and biological processes within the biosphere

Assessment Criteria
The learner can:
1. Explain the processes involved in photosynthesis, respiration, energy transfer and the carbon and nitrogen cycles

Unit content

Processes

Photosynthesis: process (equation) for photosynthesis, function of chlorophyll, functionality of guard cells and stomata, factors needed for photosynthesis to occur (light, chlorophyll, carbon dioxide, water)
Respiration: definition of aerobic and anaerobic respiration, equation for aerobic respiration, structure and function of mitochondria, diffusion, compensation point, factors influencing the rate of respiration (temperature, water availability, seasonal growth)
Energy transfer, carbon, and nitrogen cycle
Unit 305  Understanding Principles of Physical and Biological Environmental Processes

Outcome 4  Know how water is used and managed within the hydrosphere

Assessment Criteria
The learner can:
1. Describe the physical and chemical properties of water
2. Outline the processes involved in the hydrological cycle

Unit content

Properties
Solid, liquid and gas states, universal solvent, pH, neutral, surface tension, transparency, polar molecule, capillary action, electrical conductivity, boiling point (effects of altitude), specific heat capacity, heat of vaporisation, density, properties of ice

Processes
Precipitation, evaporation, transpiration, condensation
Unit 305  
Understanding Principles of Physical and Biological Environmental Processes

Notes for guidance

This unit will provide the learner with an introduction to the natural environment and how the planet works. This is fundamental to understanding the limited nature of natural resources by looking at how they are formed over millions of years. Where life exists depends on the geology, climate and water availability. By looking at the physical processes of rock formation and erosion, moving toward soil formation, the unit will cover how weather and climate effect soil development with interaction from the biosphere. Learners will learn through formal lectures, museum visits as well as field trips with expert guidance, and learners should be able to carry out some field work within this unit.

In Outcome 1 learners will be taught about the energy sources which power the physical processes within the atmosphere, how volcanic activity solar radiation and magnetism help create high and low pressure zones which control the trade winds and weather systems found though out the globe. These changing weather systems linked in with the hydrosphere and solar radiation and the tilt of the earth set geographical limits to climatic areas.

In Outcome 2 learners will investigate the distribution of Britain’s underlying geology explaining how rocks were formed. By carrying out a local soil survey the learner can explored how the soil has been formed and what parent rocks may have been involved.

In Outcome 3 knowing how the biosphere transmits energy via photosynthesis and respiration and interacts with the hydrosphere are essential so that learners can investigate the movements of the elements nitrogen and carbon with in the biosphere and so bring together the building blocks of life.

In Outcome 4 learners will be able to show the movement of water round the planet, being stored within the lithosphere, hydrosphere and biosphere and to a limited extent the atmosphere.

By the end of the unit the learner will have knowledge and understanding of environmental processes and the environmental impacts of human activities on the planet.

References

Books

Websites
www.geolsoc.org.uk  The Geological Society
www.soils.org.uk  British Society of Soil Science
www.metoffice.gov.uk  Met Office
Unit 306  Understanding Ecology of Game Species

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of the ecology of game species and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

This unit provides knowledge and skills in the identification, ecology and population assessment of wild game and in the management of their habitats.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Be able to identify game species found in the UK
2. Understand the ecology and associated behaviour of game species
3. Be able to manage habitats to encourage wild game populations
4. Know techniques used to determine game population size.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga2 Monitor game populations and habitat
Ga11 Maintain and improve game and wildlife habitat
Ga13 Manage wild game populations

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

• An assignment covering practical skills and underpinning knowledge.
Unit 306  Understanding Ecology of Game Species
Outcome 1  Be able to identify game species found in the UK

Assessment Criteria
The learner can:
1. Identify **game species** found in the UK
2. Describe **features** of game birds used to identify the **sex**
3. Describe features of game birds used to identify **age**

Unit content

**Game species**
Gamebirds: pheasant, partridges (grey, red-legged), grouse (red, black), ptarmigan (Scotland only), Duck: mallard, teal, wigeon, pintail, shoveler, gadwall, tufted duck, pochard, goldeneye, scaup (NI only)
Geese: pink footed, greylag, white fronted (England and Wales only), Canada
Waders: golden plover, common snipe, jack snipe (NI only), curlew, woodcock
Rail: Coot (England, Wales and Scotland only), moorhen (England, Wales and Scotland only)

**Features**
Appearance, plumage, size, spurs, wattles, behaviour

**Sex**
Male and female

**Age**
Chicks, poults, first year, adult, old
Unit 306  Understanding Ecology of Game Species
Outcome 2  Understand the ecology and associated behaviour of game species

Assessment Criteria
The learner can:
1. Explain the **annual life cycle** of game birds
2. Discuss the **breeding ecology** of game birds
3. Compare the **habitat requirements** of different game species
4. Assess the changes in habitat requirements **throughout the year**

Unit content

**Annual life cycle**
Pairing-up, breeding, nesting, hatching, fledging, brood dispersal, migration

**Breeding ecology**
Monogamous/polygamous strategies

**Habitat requirements**
Features: topography, structure, water habitats, size and layout, cover, presence of other species, food availability and source, predator presence or absence
Requirements for: nesting cover, brood rearing, escape cover, over-wintering and feeding

**Changes throughout the year**
Breeding season, laying, growing, released
Unit 306  Understanding Ecology of Game Species
Outcome 3  Be able to manage habitats to encourage wild game populations

Assessment Criteria
The learner can:
1. Select equipment required to carry out game habitat management
2. Carry out practical game habitat management to improve or create habitats for game birds
3. Explain how habitat is managed to optimise sporting and nature conservation value.

Unit content

Equipment
Hand tools: spades, forks, shovels, secateurs, handsaws, clippers, hammers, pickaxes, hand fencing equipment, safe and correct use, maintenance and storage, sharpening of tools where appropriate, suitable clothing and Personal Protective Equipment (PPE)

Habitat
Woodland, hedges, cover crops, field margins, heather moorland

Habitat management (carry out)
Coppicing, planting and laying, woodland coppicing, thinning and planting, heather burning and cutting, grass margins, cover crops, beetle banks, conservation headlands, development and use of habitat management schemes
Unit 306  Understanding Ecology of Game Species
Outcome 4  Know techniques used to determine game population size

**Assessment Criteria**
The learner can:
1. Describe the **methods** commonly used to survey wild game populations
2. List **equipment** required to carry out a wild game survey
3. Specify the **information** and calculations required to estimate a game population.

**Unit content**

**Methods**
Pair counts, brood counts

**Equipment**
Binoculars, vehicle, recording equipment, map of area

**Information**
Pairs present in Spring, average young per pair in Summer
Unit 306  
Understanding Ecology of Game Species

Notes for guidance

Tutors delivering and assessing this unit should use as wide a range of techniques as possible. Lectures, discussions, presentations, site visits, supervised game management practical's, exercises, research using the internet and/or library resources and the use of personal and/or industrial experience could all be included.

Health and safety issues relating to safe working must be stressed and regularly reinforced, and risk assessments must be undertaken prior to practical activities. Adequate PPE must be provided and used following the production of suitable risk assessments.

Outcome 1 requires the learner to be familiar with all legal quarry species so that they can accurately identify them in the field. For the commoner game species the learners should also be able to differentiate between the sexes and age of birds when handling them either dead or alive. Ideally identification techniques should be taught using live animals. However, if these are not available then tutors should use high quality audio visual materials or preserved specimens. It would be beneficial for learners to visit habitats. Visits could be made to, for example, wildfowl collections such as a Wildfowl and Wetlands Trust reserve.

Outcome 2 covers the ecology of game species and learners should understand the breeding behaviour of the commoner game species, what their habitat requirements are and how these vary at different times of year. From this understanding the learner should be able to develop a management plan for a specific area to meet the needs of the game species found there.

Outcome 3 requires the learners to undertake some practical habitat management that will benefit locally occurring game species. This is likely to be delivered by site visits and supervised habitat practicals supported by formal lectures, discussion and independent learner research. The learner should be familiar with a range of habitat management techniques used to encourage wild game species.

Outcome 4 addresses how the number of wild game birds is ascertained so that a sustainable harvest can be achieved. It is likely to be delivered by formal lectures, discussion, site visits, practicals and independent learner research. Ideally tutors will use real life situations to illustrate the techniques. If this is not possible then the use of case study materials is acceptable. Visiting expert speakers could add to the relevance of the subject for the learners. For example, a game conservancy advisor or game manager could talk about the use of estimation techniques that they use within their research or management work.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.
References

Books:
Cooper J. and Cooper M. 2004 Captive Birds in Health and Disease: Gamebirds, Raptors, Gamebird ISBN 0888395382

Websites:
www.gwct.org.uk The Game and Wildlife Conservation Trust
Unit 307  Undertaking Vertebrate Pest and Predator Control

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to pest and predator control skills and understanding and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Control of pests and predators is an integral part of good countryside management. The ability to eliminate and deter unwanted animals can benefit natural ecological preservation as well as the man-made environment. The ability to efficiently control pests and predators in accordance with relevant legal obligations is a sought after skill.

Learning outcomes

There are four learning outcomes to this unit. The learner will:

1. Be able to identify the principal UK pest and predator species
2. Understand the ecology of common UK pest and predator species
3. Be able to control pests and predators using lethal methods
4. Understand pests and predators deterrent using non-lethal methods

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU46 Control vertebrate pests and predators using traps
CU80.1 Plan and manage the control of pests, diseases and disorders

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.
Unit 307  Undertaking Vertebrate Pest and Predator Control
Outcome 1  Be able to identify the principal UK pest and predator species

Assessment Criteria
The learner can:
1. Identify principal UK pest and predator species
2. Describe the tracks and signs of locally occurring pests and predators
3. Survey a given area to identify locally occurring pests and predators

Unit content

UK pest and predator species
Fox, badger, stoat, weasel, mink, polecat, pine marten, otter, rat, rabbit, house mouse, grey squirrel, cat (wild and feral), crow (carrion and hooded), rook, magpie, jackdaw, jay, raven, buzzard, sparrow hawk, tawny owl, hen harrier, goshawk, peregrine falcon, woodpigeon, canada goose

Tracks and signs
To include as appropriate to the species: faeces, footprints, homes/nests, fur/feathers, evidence of kills, smell

Survey
Direct methods
Open range counting, vantage point counts

Indirect methods
Faeces, tracks, browsing, fraying, bark stripping, ground flora degradation, loss of habitat structure, road traffic collisions, crop damage
Equipment: radios/walkie talkies, binoculars, telescopes, Global Positioning System (GPS), digital cameras, notebooks, pencils, maps, markers, health and safety equipment

Identify
From physical presence of species at time of survey and/or tracks and signs as listed above
Unit 307  

**Undertaking Vertebrate Pest and Predator Control**

Outcome 2  
Understand the ecology of common UK pest and predator species

**Assessment Criteria**

The learner can:

1. Explain the ecology of a selected *avian* pest or predator species
2. Explain the ecology of a selected *mammalian* pest or predator species

**Unit content**

**Ecology**

Life-cycle especially breeding behaviour, distribution and preferred habitats, population status, diet, impact and damage done as a pest/predator

**Avian**

Crow, magpie, buzzard, sparrow hawk, wood pigeon

**Mammalian**

Fox, stoat, mink, rat, rabbit, grey squirrel
Unit 307  Undertaking Vertebrate Pest and Predator Control

Outcome 3  Be able to control pests and predators using lethal methods

Assessment Criteria
The learner can:
1. Demonstrate the correct methods of controlling pests and predators using spring traps
2. Demonstrate the correct methods of controlling pests and predators using snares
3. Demonstrate the correct methods of controlling pests and predators using live catch traps

Unit content

Correct methods
As stated in the relevant codes of practice for each control method

Spring traps
Fenn, magnum, Kania, and DOC

Snares
Fox and rabbit

Live catch traps
Larsen, ladder/crow cage, and mink rafts
Unit 307  Undertaking Vertebrate Pest and Predator Control
Outcome 4  Understand pests and predators deterrent using non-lethal methods

Assessment Criteria
The learner can:
1. Discuss the effectiveness of selected non-lethal deterrents on pests and predators
2. Recommend appropriate non-lethal methods for a given pest situation
3. Recommend appropriate non-lethal methods for a given predator situation

Unit content

Non-lethal deterrents
Exclusion, audible, visual, olfactory, electrical, diversionary feeding and habitat manipulation

Non-lethal methods of control
Trapping, live catch
Unit 307  Undertaking Vertebrate Pest and Predator Control

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required to control the effects of vertebrate pests and predators. Throughout the unit, the emphasis should be on safe working and the humanitarian application of effective control techniques. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Outcomes 1 and 2 cover the identification and ecology of the common vertebrate pests and predators likely to be encountered in the UK. These will include agricultural pests as well as those pests and predators related to game and wildlife management. The legal status of species is considered, together with the relevant legislation. The basic process of identification using size, colour, signs, and tracks is also covered as well as species ecology, breeding, habitat and populations. Populations of pests and predators on given sites will be determined by surveys. These fundamental elements can then be transposed across all the other related species studied. Deer are not studied in this unit, as this topic is covered in ‘Understand Deer Management’.

In Outcome 1, learners must be able to identify the main UK pest and predator species either in pictorial form or as physical specimens. They must also be familiar with the tracks and signs of locally common pest and predator species. This knowledge should be used to survey a local area to identify the presence of common pests and predators.

Outcome 2 requires learners to explain the ecology of a selected avian and a selected mammalian pest or predator species. Tutors should identify the species or agree them through discussion with the learners.

Outcome 3 looks in more detail at lethal control techniques, the variety of traps and methods available, their specific uses, and related legislative obligations and codes of practice. The setting and positioning of lethal control methods is covered, and this unit should be delivered in a practical setting. For Outcome 3 learners are required to demonstrate an understanding of the correct methods of controlling pests and predators using selected lethal methods. All activities should be completed with regard to the appropriate health and safety risk assessments and practices, and should be consistent with relevant legislation and codes of practice.

Outcome 4 covers the use of non-lethal deterrents to prevent damage from pests and predators, and determines their effectiveness. It covers their use and related codes of practice and legislation. This is a vital measure when considering the number of protected species that can have an impact on game and wildlife populations, and the use of deterrents in situations where lethal control is difficult or unnecessary. In Outcome 4 learners should be encouraged to review the effectiveness of a range of deterrents in common usage and should demonstrate an understanding of what affects their effectiveness.

References

Books

Frain S 2006., Fox Control Quiller Publishing Ltd, ISBN
Game Conservancy 1994., *Predator Control Game* Conservancy Trust, ISBN
Game Conservancy 2002., *Hints for using Larsen Traps* Game Conservancy Trust, ISBN

**DVD**

Trapping Techniques: Part 1 - Moles, Squirrels, Rabbits and Mink, Countryman Pest Control, Steve Caple 2002,

**Websites:**

- [www.defra.gov.uk](http://www.defra.gov.uk) - The Department for Environment, Food and Rural Affairs
- [www.wales.gov.uk](http://www.wales.gov.uk) - Welsh Assembly Government
- [www.scotland.gov.uk](http://www.scotland.gov.uk) - Scottish Executive Environment and Rural Affairs Department
- [www.dardni.gov.uk](http://www.dardni.gov.uk) - Department of Agriculture and Rural Affairs Northern Ireland
- [www.nationalgamekeepers.org.uk](http://www.nationalgamekeepers.org.uk) - National Gamekeepers Organisation
- [www.basc.org.uk](http://www.basc.org.uk) - The British Association for Shooting and Conservation
- [www.gct.org.uk](http://www.gct.org.uk) - The Game Conservancy Trust
Unit 308  Undertaking Woodland Habitat Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of woodland habitat management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to provide learners with the ability to recognise the features of woodland habitats and the skills required for their management.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the historical development of woodland
2. Be able to survey the structures and features within a woodland ecosystem
3. Understand the management of woodland habitats
4. Be able to manage woodland habitats.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU88 Manage habitats
EC23 Prepare, conduct and report on environmental change

Endorsement of the unit by a sector

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 308  Undertaking Woodland Habitat Management
Outcome 1  Understand the historical development of woodland

Assessment Criteria
The learner can:
1. Discuss the historical influences that have created the current level of woodland cover in the UK
2. Explain the development of woodland types and management systems.
3. Compare historic features within a woodland

Unit content

Historical influences
Ice age, wildwood, Mesolithic, Neolithic, Bronze Age, Iron Age, Roman, Domesday Book, Middle Ages, Industrial Revolution, First World War, Forestry Commission, Second World War, post-war destruction, 1950s and 60s greening. Forestry expansion, community forest initiative

Woodland types
Succession, National Vegetation Classification (wet woodlands, lowland, upland, scrub communities), ancient woodlands, ancient semi-natural, primary, secondary

Management systems
Coppicing, coppice with standards, wood pastures, pannage, wooded common

Historic features
Name, boundary shape, wood banks, out-grown hedges, ditches, pits, charcoal hearths, saw pits, tracks, woodlands indicator species
Unit 308  Undertaking Woodland Habitat Management
Outcome 2  Be able to survey the structures and features within a woodland ecosystem

Assessment Criteria
The learner can:
1. Report on the **structures and features** of a woodland **ecosystem**
2. Carry out a **survey** of a woodland

Unit content

Structure
Ground, field, shrub, canopy

Features
Name, boundary shape, wood banks, out-grown hedges, ditches, pits, charcoal hearths, saw pits, tracks, woodlands indicator species

Ecosystems
Broadleaved woodland, mixed woodland, coniferous woodland, coniferous plantations, coppice, coppice with standards

Survey
Species identification (flora and fauna)
Quantitative (for example quadrats and simple line transects) and qualitative (quality of habitat, species distribution), correlation of species and effects of abiotic factors
Recording, mapping, present information from surveys in various forms (written, data and pictoral) graphs, pie chart, basic statistics
Risk assessment: identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk
Unit 308 Undertaking Woodland Habitat Management
Outcome 3 Understand the management of woodland habitats

Assessment Criteria
The learner can:
1. Evaluate different types of woodland habitats and relevant management techniques
2. Prepare equipment and resources for practical management of woodland habitats

Unit content

Woodland habitats
Glades, rides, woodland edges, veteran trees, deadwood, ponds, streams, bog, thicket, dense shade

Woodland management techniques
Management plan, health and safety, planting/sowing (trees, shrubs and ground flora), natural regeneration, thinning, clearance, coppice, agroforestry, silvicultural systems

Equipment and resources
Personal Protective Equipment (PPE) (e.g. boots, safety helmet, waterproof clothing, gloves), first aid kit, planting equipment, fencing equipment, pruning equipment, saw, tools for vegetation clearance, coppicing tools, maintenance (e.g. cleaning, oiling, sharpening)
Unit 308 Undertaking Woodland Habitat Management
Outcome 4 Be able to manage woodland habitats

Assessment Criteria
The learner can:
1. Safely carry out **practical management** of woodland habitats
2. Recommend **improvements** to the management of woodland habitats

Unit content

**Practical management**
Aims, objectives, management plan, health and safety, planting/sowing (trees, shrubs and ground flora), natural regeneration, thinning, clearance, coppice, ride creation, glade creation, pond creation, deadwood introduction, bird boxes, bat boxes

**Improvements**
Increased diversity, invasive species control, sustainable management, habitat creation, waste management
Unit 308 Undertaking Woodland Habitat Management

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required to recognise features of woodland habitats and prepare, plan and undertake practical management of woodland habitats. Learners will develop an understanding of the historical influences that have affected woodland cover and understand the range of woodland habitats present today. An understanding of the management techniques available for woodland habitats will be developed along with the opportunity to put some techniques into practice. The unit should cover a wide range of possible activities and potential sites.

Throughout the unit the emphasis should be on safe working and sustainability. It is expected that learners will be aware of safe working practices and be familiar with accepted practices and behaviours within the context in which they are working. The importance of sustainable practices should be woven into the delivery throughout.

In Outcome 1, the learner will be required to understand how woodland cover has been influenced historically and has led to the development of different woodland types and management systems. Learners should develop an appreciation of the potential historical features within woodland. It is anticipated that the delivery of this outcome will be through formal lectures and discussion but should also be delivered through independent learner research and site visits (e.g. to ancient woodland).

Outcome 2 covers woodland surveying. It is anticipated that the delivery of this outcome will contain some formal lectures and discussion, but it requires site visits to woodland and supervised classroom activities. It may be beneficial to have visiting expert speakers to add relevance to the subject particularly those that have been involved woodland habitat surveys. Learners will develop their identification skills and an appreciation of the structures that make up woodlands.

In Outcome 3, the learner will develop an understanding of the management techniques relevant to different woodland habitats. Emphasis should be placed on correct planning and health and safety. It is anticipated that the delivery of this outcome will be mainly through formal lectures and discussion but the addition of guided visits to habitats under successful management would add context.

In Outcome 4, the learner will be able to put into practice knowledge gained from the other learning outcomes. This outcome will require some formal delivery but it is expected that most will be delivered through practical activities. Learners will prepare for and undertake practical woodland habitat management. The emphasis should be heavily placed on health and safety throughout the delivery of this outcome. Learners will also have the opportunity to discuss improvements to the management of woodland habitats.

This unit aims to extend the learners knowledge and skills involved with woodland habitat management. Emphasis should be placed upon the importance of planning and health and safety. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of woodlands to add depth to the learner experience and put practices into context.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity to deal with a range of activities in different situations that reflect current industry trends.
References

Books


Journals

British Wildlife
Quarterly Journal of Forestry

Websites

www.forestry.gov.uk The Forestry Commission
www.naturalengland.org.uk Natural England
www.rfs.org.uk The Royal Forestry Society
www.woodlandtrust.org.uk The Woodland Trust
Unit 309  Undertaking Farm Habitat Management

Level: 3
Credit value: 10

Unit aim

This unit aims to introduce learners to farm habitat management skills and knowledge and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Upon completion of this unit the learner will have looked at changes in the farmed landscape since the Enclosures Acts, the various influences on and effects of these changes. They will consider ecological aspects of farm habitat management. They will develop skills in farm habitat surveying and practical habitat management.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Understand the development of the agricultural landscape
2. Understand the ecology of farm habitats and wildlife species
3. Be able to carry out farm habitat and species surveys
4. Be able to carry out practical farm habitat management

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
EC23 Prepare and conduct field surveys

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC

Assessment and grading
This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 309  Undertaking Farm Habitat Management
Outcome 1  Understand the development of the agricultural landscape

Assessment Criteria
The learner can:
1. Explain the development of the agricultural landscape in the UK
2. Explain effects of legislation or policy on the development of the farmed landscape

Unit content

Agricultural landscape
Primeval, medieval, pre-enclosure, enclosure, industrial revolution, post 1940's, modern day agriculture

Legislation or policy
Ecological effect: change to species diversity, range and distribution, change to habitat types and characteristics, impact of intensive agricultural management
Unit 309 Undertaking Farm Habitat Management
Outcome 2 Understand the ecology of farm habitats and wildlife species

Assessment Criteria
The learner can:
1. Explain the ecological importance of habitat diversity in a selected farmed landscape
2. Evaluate the effectiveness of a given biodiversity action plan

Range
Habitat: hedges, stone walls, ponds and lakes, rivers and streams, woods, trees, field margins, conservation headlands and grasslands

Unit content

Ecological importance
Provision of habitat for a diverse range of species (flora and fauna), rare and uncommon species, species with specific habitat requirements, availability and access to food preferences

Biodiversity action plans
Habitat Action Plans (HAPs), for example ancient and or species rich hedgerows action plan, cereal field margin action plans, grassland action plans, species action plans, ecological importance of habitat diversity in the farmed landscape, process of species and habitat action planning
Unit 309  
**Undertaking Farm Habitat Management**

Outcomes 3
Be able to carry out farm habitat and species surveys

**Assessment Criteria**
The learner can:
1. Carry out ecological **surveying** of a given **farm habitat**
2. Report results of **farm habitat** and **species** surveying

**Unit content**

**Surveying**
Whole farm assessments, Linking Environment and Farming (LEAF) audit, Farm Environmental Record, Farm Environmental Plans (Environmental Stewardship Scheme), National Vegetation Classification, hedgerow survey, farmland bird surveys, arable plants survey, farmland species, ecological features, nature conservation value, habitat condition assessment, potential biodiversity improvements

**Farm habitats**
Hedges, stone walls, ponds and lakes, rivers and streams, woods, trees, field margins, conservation headlands, and grassland

**Report results**
Qualitative and quantitative, suitable presentation methods (for example tables, pie charts, annotated maps, histograms, scattergraphs), statistical analysis to include mean, mode, distribution and correlation, establishing conclusion in relation to survey aims, identify potential sources of error within survey data

**Species**
Birds, mammals, invertebrates, grasses, shrubs, trees, wildflowers
Unit 309  Undertaking Farm Habitat Management
Outcome 4  Be able to carry out practical farm habitat management

Assessment Criteria
The learner can:
1. Prepare equipment and resources for practical management of farm habitats
2. Carry out practical management techniques safely
3. Recommend improvements to the management of farm habitats

Unit content

Farm habitats
Hedges, stone walls, ponds and lakes, rivers and streams, woods, trees, field margins, conservation headlands and grasslands

Equipment
Hand tools: spades, forks, shovels, secateurs, handsaws, clippers, hammers, pickaxes, hand fencing equipment, safe and correct use, maintenance and storage, sharpening of tools where appropriate, suitable clothing and Personal Protective Equipment (PPE)

Practical management
Mowing, renovation, planting and staking as applicable, clearing (path, fence line), coppicing, uprooting, hedge maintenance, pruning, thinning, cutting or mowing and mulching, pond, stream and ditch clearance
Good practice: composting, materials that can be composted, re-used and/or recycled, finding alternative uses, methods of recycling, avoid wastage

Improvements
Setting habitat management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements
Unit 309  Undertaking Farm Habitat Management
Notes for guidance

Upon completion of this unit, the learner will have looked at changes in the farmed landscape from Primeval Time and the various influences on it, and effects of these changes. They will consider ecological aspects of farm habitat management. They will develop skills in farm habitat surveying and practical habitat management.

Delivery is likely to be a mixture of classroom learning and practical farm habitat surveying and management. Any sites to be used needs to comply with local legislation and have prior full permission from the landowner.

Where practical activities are used health and safety issues relating to working in an outdoor environment and handling animal material must be stressed and regularly reinforced, and risk assessments must be undertaken and recorded prior to practical activities. Adequate Personal Protective Equipment (PPE) must be provided. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely.

Outcome 1 requires the learner to understand the development of the agricultural landscape and how this has altered from Primeval Time to the present day. They will be required to consider the influence of UK legislation and policies, effects of global and national events, and the changes to farming practices. This would include learners identifying biotic and abiotic effects e.g. how the removal of hedges, ditches, ponds, woodland, farm buildings, dry stone walls, grading of the watercourse, the use of pesticides and inorganic fertilisers, silting of water courses via soil erosion have affected the landscape. As well as classroom activity learners would benefit from practical sessions and visits to enhance learning and understanding. Tutors should be encouraged to use local sites wherever possible. Theory delivery can be through a series of formal lectures, directed study, internet and library associated research.

Outcome 2 requires the learner to understand farm habitats and wildlife species. Tutors should be encouraged to use local sites wherever possible. The outcome takes into consideration the influence of farm biodiversity, e.g. local and national Biodiversity Action Plans (BAP) as well as the biodiversity action planning process. The emphasis of the unit is for learners to explore the elements of the landscape occupied by semi natural habitats. Theory delivery can be through a series of formal lectures, directed study, internet and library associated research.

Outcome 3 requires the learner to practically plan, carry out and report findings of farm habitat and species surveys. Learners are required to identify plant and animal species present as well as making assessments on the condition of the farm habitats and making suggestions as to ways these could be improved. It is anticipated that there will be some group activities during surveying but learners are encouraged to present their findings individually.

Outcome 4 requires the learner to plan and use equipment and resources to recommend and carry out practical farm habitat management and to devise a management scheme taking into account the needs of the sites they access. It links well into the previous outcomes where the learners have gained practical skills and knowledge to complete the task. The site to be used needs to comply with local legislation and have prior full permission from the landowner prior to implementing change.

Work experience would be beneficial for learners wishing to pursue a career in this field. Visits from visiting speakers could add relevance to the subject including their work the situations they face and the methods they use.
References

Books


Unit 310 Understanding River Fishery Creation and Management

Level: 3
Credit value: 10

Unit aim
This unit aims to provide learners with an understanding of the principles of river fishery creation and management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to allow learners to study river habitats and relate this to how they can be managed sustainably for anglers, taking into account the important needs of the environment and other users.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Understand the ecology of different rivers
2. Understand the causes of river degradation and the methods used to improve riverine habitats
3. Know the types of river fisheries available in the UK and the factors that allow them to succeed
4. Be able to plan the creation and management of a riverine fishery

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
n/a

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC

Assessment and grading
This unit will be assessed by:
- An assignment covering the skills and underpinning knowledge
Unit 310  Understanding River Fishery Creation and Management

Outcome 1  Understand the ecology of different rivers

Assessment Criteria
The learner can:
1. Explain the characteristics of the typical habitats found in selected river fisheries
2. Explain the habitat requirements of a range of river fish species

Unit content

Typical habitats
Pool, riffle, glide, gravels, over hanging vegetation, woody debris, aquatic weed, under cut banks, bars, berms, runs

River fish species
Coarse fish for example Roach, Bream, Chub, Pike, Barbel, Dace, Bleak, Zander
Game fish for example Salmon, Brown Trout, Rainbow Trout, Grayling, Sea Trout
Unit 310  Understanding River Fishery Creation and Management

Outcome 2  Understand the causes of river degradation and the methods used to improve riverine habitats

Assessment Criteria
The learner can:
1. Explain the major causes of river degradation at a selected site
2. Assess different methods to improve one situation of river degradation at a selected site

Unit content

Causes of river degradation
Pollution (agricultural, industrial), eutrophication, afforestation, abstraction, over shading, impoundments, for example wiers and dams, siltation, channelisation, dredging, recreation, undershading, non-native plant species, for example Himalayan Balsam, non-native animal species eg. signal crayfish, American mink

Methods to improve
Bank top methods, for example post and wire fencing, buffer strips, tree planting, coppicing, pollarding, bankside work, for example faggots, revetment, gabions, in channel features for example deflectors, islands, woody debris, boulder placement
Unit 310  Understanding River Fishery Creation and Management

Outcome 3  Know the types of river fisheries available in the UK and the factors that allow them to succeed

Assessment Criteria
The learner can:
1. Identify the coarse and game fisheries available in the UK

Unit content

Coarse Fisheries
Named venues, e.g. Severn, Itchen, Great Ouse.
Species e.g. Barbel, Chub, river zonation, geographical differences, costs to fish, methods of angling undertaken e.g. stick float, feeder, trends in fishing, rod licences, closed seasons, local byelaws and national legislation, fishing rights e.g. club waters, syndicates, day tickets

Game Fisheries
Named venues, for examples Spey, Tweed, Test Itchen, Teifi, Wye, native species, for example Salmon, Sea Trout, Brown Trout, Grayling.
Stocked species for example Rainbow Trout, Brown Trout, triploid, diploid, value to local rural economy, angling tourism, geographical differences, river zonation, threats to such fisheries, costs to fish, methods of angling undertaken for example fly worm, lure, rod licences, closed seasons, local byelaws and national legislation, fishing rights syndicates, day ticket, club waters
Unit 310  Understanding River Fishery Creation and Management

Outcome 4  Be able to plan the creation and management of a riverine fishery

Assessment Criteria

The learner can:
1. Create a plan for the management of a selected river fishery over a given period

Unit content

Plan
Setting river fishery management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

Management of a selected river fishery
Legal predator control, fish stock management, stocking, bankside vegetation control, aquatic vegetation control, poacher checks, angler liaison, fish population management/surveys, maintaining access points for example bridges, stiles, gates, steps, maintaining boundaries for example fences, biological and chemical water quality checks, maintaining in-stream structures for example deflectors, islands, faggots, habitat improvement works
Unit 310  
Understanding River Fishery Creation and Management

Notes for guidance

This unit is designed to provide the learner with the sound knowledge and skills required to understand how rivers across the United Kingdom are managed for angling. The context of teaching will differ for each outcome delivered and should include formal lectures, site visits, study tours, learner practicals and small group research.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours when working in around water courses. Risk assessment should be undertaken and all learners must wear the appropriate Personal Protective Equipment (PPE) e.g. chest waders and a buoyancy aid.

In Outcome 1, the learner will be required to understand the ecology of a river system and the habitats required for a range of fish species. It is accepted that this outcome will require some formal delivery, but it should also be delivered in practical situations and site visits where learners can visually see the different river habitats. Learners should be encouraged to research different fish species found in rivers and understand their habitat requirements throughout the year.

Outcome 2 covers river degradation and river rehabilitation. It is anticipated that the delivery of this outcome will be through formal lectures, but it would be beneficial to include a site visit or study tour to an area which has encountered river degradation and river rehabilitation, such as the river Teifi in Mid Wales. Learners should also focus on local and national case studies across the UK and look at the work undertaken by river trusts and the Environment Agency.

In Outcome 3, the learner will be required to understand the different river systems for angling across the UK. Emphasis should be placed on the main types of angling, for example Salmon Fishing on the Scottish rivers, Sea Trout Fishing in Wales, the Chalkstreams and the coarse rivers of the Midlands, for example the Severn and Trent. Guided learner research and formal lectures should form the main part of the teaching for this outcome, with study tours and site visits where necessary.

In Outcome 4 the learner will be able to understand the typical duties associated with management of river fisheries. Learners should be familiar with the daily, weekly and yearly duties undertaken by those employed in river fishery management e.g. river keepers. Where possible, learners should have the opportunity to undertake a range practical task on a variety of river fisheries. Alternatively a river keeper could talk about his/her role and duties.

Learners working towards level 3 are likely to have some experience of river management. This unit aims to extend the learners knowledge and skills involved with the management of the variety of rivers found across the UK. Emphasis should be placed not only on formal lectures but also on site visits and study tours to see real life examples.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of rivers to add depth to the learner experience.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity to study the range of river fisheries found across the UK.
References

Books


Journals

The Wild Trout Survival Guide - The Wild Trout Trust
Rivers and Wetlands Best Practice Guidelines- The Environment Agency
Trout and Salmon Magazine
Salmo Trutta Wild Trout Trust magazine
Game Fisher The Salmon and Trout Association magazine
Annual assessment of salmon stocks and fisheries in England and Wales (CEFA5 & the EA)
National Trout and Grayling strategy. The EA
The state of Englands Chalk Rivers. The EA

Websites

www.associationofrivertrusts.org The Association of River Trusts
www.atlanticsalmontrust Atlantic Salmon Trust
www.defra.gov.uk The Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk The Environment Agency
www.gct.org.uk The Game Conservancy Trust
www.graylingsociety.org The Grayling Society
www.lantra.co.uk Lantra Sector Skills Council
www.salmon-trout.org The Salmon and Trout Association
www.thebarbelsociety.co.uk The Barbel Society
www.therrc.co.uk The River Restoration Centre
www.wildtrout.org The Wild Trout Trust
Unit 311  Understanding Stillwater Fishery Creation and Management

Level: 3
Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of Stillwater fishery creation and management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to allow learners to study the various characteristics of stillwaters, enabling learners to understand how to plan, create and manage fisheries to meet the requirements of the anglers and the fish.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the characteristics of stillwaters and the requirements of the different sport fisheries
2. Understand the creation of a sports fishery
3. Be able to manage the fish stocks in a stillwater sport fishery
4. Be able to undertake a range of stillwater fisheries management tasks

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge
Unit 311  Understanding Stillwater Fishery Creation and Management

Outcome 1  Understand the characteristics of stillwaters and the requirements of the different sports fisheries

Assessment Criteria
The learner can:
1. Explain the characteristics of different stillwater sport fishery types
2. Explain the habitat requirements of a range of stillwater fish species

Unit content

Characteristics of different stillwater sport fishery types
Fishery types: coarse, game, match, specimen
Characteristics: size, shape and design, facilities for the angler, costs to fish, species of fish, sizes of fish, stocking densities

Habitat requirements of a range of stillwater fish species
Water quality (biological and chemical), depth, temperature, aquatic vegetation, bankside vegetation, cover, spawning and nursery habitat, native and non native species, pollution, disease
Unit 311  Understanding Stillwater Fishery Creation and Management

Outcome 2  Understand the creation of a sports fishery

Assessment Criteria
The learner can:
1. Explain the creation of a stillwater fishery from a greenfield site
2. Explain the creation of a specified fishery from an existing stillwater

Unit content

Creation of a stillwater fishery
Initial planning (site surveys, test holes, local plans), other local fisheries, water sources (spring fed, on line, off line), the planning process, planning requirements, location and siting, design, construction methods, machinery used, costs, timescale, excavation, features (islands, bars, berms, landscaping, planting schemes), facilities for the anglers (car park, access, angling pegs, lodge), Town and Country Planning Act, health and safety, environmental impact

Creation of a specified fishery
Coarse, trout, mixed, pleasure, match, specimen
Lakes, pools, gravel pits, ponds, other water users, costs, water quality checks, fish population surveys, environmental impact, facilities for the angler, financial viability and return
Unit 311 Understanding Stillwater Fishery Creation and Management

Outcome 3 Be able to manage the fish stocks in a stillwater sport fishery

Assessment Criteria
The learner can:
1. Plan the management of the fish stocks in contrasting sports fisheries

Unit content

Management
Trout fishery rules (catch and kill, catch and release), coarse fishery rules (net dips, unhooking mats, barbless hooks), predation, poaching, disease, habitat requirements, habitat creation (fish refuges, spawning areas), population management (seine netting and electro fishing), support measures (aeration and feeding), maintaining water quality, Wildlife and Countryside Act 1981

Fish stocks
Native and non-native species, Environment Agency Consent, health checks, Centre for Environment, Fisheries and Aquaculture Centre registration scheme, coarse and game species, timing of stocking, stocking densities, costs, sizes, numbers, over stocking, competition, poor recruitment Salmon and Freshwater Fisheries Act 1975, Codes of Practice
Unit 311  Understanding Stillwater Fishery Creation and Management

Outcome 4  Be able to undertake a range of stillwater fisheries management tasks

Assessment Criteria
The learner can:
1. Plan and carry out a range of aquatic plant management tasks
2. Plan and carry out a range of maintenance tasks for the angler

Unit content

Aquatic plant management tasks
Bankside vegetation, marginal plants, submerged plants, floating leaved plants, free floating. Coppicing, pollarding, pruning, cutting slashing, raking, use of boom, health and safety, environmental impact, animal welfare issues

Maintenance tasks for the angler
Maintenance of banks, access points, angling pegs, paths, steps, boundaries, surfaces, seats/benches, car parks, health and safety, risk assessment, environmental impacts, costs
Unit 311   Understanding Stillwater Fishery Creation and Management

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required to create and manage new sport fisheries. The context of teaching will differ depending on the outcome being delivered, however it is expected that a mixture of theory and practical session should be used. The unit should cover a range of coarse and game stillwater sport fisheries.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and be familiar with current legislation and the environmental implications of the content of this unit.

In Outcome 1, the learner will be required to recognise the different types of stillwater sport fisheries found in the United Kingdom and how these have developed over the last twenty years. In addition learners will know about the different fish species found in such fisheries and habitat requirements of each. It is accepted that this outcome will require some formal delivery and guided learner research. However visits to local fisheries should also be encouraged. Learners should gain an understanding of both coarse and game fisheries.

Outcome 2 covers the planning and construction of new stillwater sport fisheries. It is anticipated that the delivery of this outcome will be through formal lectures, but it would be beneficial for learners to visit newly created fisheries and talk to fishery managers to see real life examples. Learners need to be aware of current legislation with regard to local and national planning policies and the costs involved in constructing new sport fisheries.

In Outcome 3, the learner will be required to know the stocking levels and policies for both coarse and game fisheries. Learners should know the species, sizes, densities and costs for stocking coarse and game stillwater sport fisheries. They should also be aware of how these fish should be managed once stocked. Current legislation, Codes of Practice and fish welfare issues should also be covered. It is expected that this outcome will be delivered by formal lectures, group work and discussion.

In Outcome 4 the learner will be able to carry out a range of practical fishery management tasks. Tasks must include vegetation control and fishery maintenance tasks at both coarse and game fisheries to gain a broad understanding of the works required. Delivery should be through short formal lectures followed by hands on practical sessions. Learners should be fully involved in undertaking risk assessments and safe working practices. They should also be aware of the environmental implications of the work and how fisheries should be managed sustainably. Emphasis should be placed on legislation and Codes of Practice.

Learners working towards level 3 are likely to have some experience of fishery management. This unit aims to extend the learners knowledge of fishery creation and management. Emphasis should be placed on current practices, legislation, and prices.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. This could include a local planning officer, a fishery manager, a fish farmer or an Environment Agency Fisheries Officer. Teaching would also benefit from visits to a local coarse and trout fisheries and fish farms.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity work on both coarse and game fisheries.
References

Books

Environment Agency Guides - Environments for fish, Water plants their function and management, Coarse fish biology and management, Fisheries habitat improvement, The construction and renovation of Stillwater coarse fisheries
Maitland P S. 2004. Keys to the Freshwater Fish of Britain and Ireland (Freshwater Biological Association)

Websites

www.cefas.co.uk                           Centre for Environment, Fisheries and Aquaculture Science
www.defra.gov.uk                          Department for Environment, Food and Rural Affairs
www.wales.gov.uk                          Welsh Assembly Government
www.scotland.gov.uk                       Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk                         Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk             The Environment Agency
www.ifm.org.uk                            Institute of Fisheries Management
www.anglingtrust.net                      The Angling Trust
Unit 312  Undertake Grassland Habitat Management

Level:  3

Credit value:  10

Unit aim
This unit aims to provide learners with an understanding of the principles of grassland habitat management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will examine the history and ecology of grasslands and develop skills necessary to survey and identify species of the grassland community. They will investigate the range of tools and operations available for the management of grasslands and plan, carry out and evaluate management for a particular site.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Understand the history and ecology of grassland habitats
2. Be able to survey grassland species and habitats
3. Understand management techniques for grassland sites
4. Be able to carry out practical grassland habitat management

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
CU88.1 Identify the need for and plan habitat management work
EC23 Prepare and conduct field surveys

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge
Unit 312  
Undertake Grassland Habitat Management  
Outcome 1  
Understand the history and ecology of grassland habitats

Assessment Criteria  
The learner can:
1. Explain the **historical development of grassland** in the UK  
2. Explain the **ecology of grassland** in the UK

Unit content

**Historical development of grassland**  
The development of grasslands over time, open rangelands (following the last Ice Age), development of woodland subsequently cleared during the Neolithic period. Historical development: enclosures, field systems, agricultural improvements and the introduction of the Common Agricultural Policy (CAP) and reforms  
The definition of grasslands as a semi-natural habitat

**Ecology of grassland**  
Ecosystem succession and seral stages, Franz Vera’s model (1999), the continuous woodland model  
National Vegetation Classification (NVC) grassland types including (but not limited to): wet and dry grasslands, calcareous, acid, mesotrophic, calminarian  
Importance of grasslands for specialist species including insects, fungi, mammals and birds
Unit 312  Undertake Grassland Habitat Management
Outcome 2  Be able to survey grassland species and habitats

Assessment Criteria
The learner can:
1. Plan surveying including appropriate techniques, equipment and permissions
2. Survey grassland habitats and species
3. Report on the structures, features and ecosystem surveyed

Unit content

Surveying techniques
Plant and fungi species surveys using quadrats, random sampling, NVC data and the DAFOR (Dominant, Abundant, Frequent, Occasional or Rare) scale, Phase 1 and 2 habitat surveys, use of identification keys, time of year surveying is undertaken
Invertebrate and mammal species surveys use of tracks and trails, pit-fall traps, sweep-netting and simple observation techniques
Equipment: sweep nets, quadrats, identification books and guides, recording and reporting materials, pit-fall traps, sample jars, hand-lenses, camera and measuring devices.
Permissions: land ownership, rights of access, reasons for carrying out survey

Surveying equipment
Sweep nets, quadrats, identification books and guides, recording and reporting materials, pit-fall traps, sample jars, hand-lenses, camera and measuring devices

Report
Record information from surveys using record forms, data collection and mapping
Unit 312 Undertake Grassland Habitat Management
Outcome 3 Understand management techniques for grassland sites

Assessment Criteria
The learner can:
1. Evaluate different grassland management techniques
2. Explain grassland management objectives for a given site

Unit content

Grassland management techniques
Grassland use and purpose of management: agriculture, e.g. pasture, hay meadow, improved and unimproved grasslands; sports/recreation and amenity facilities, habitat and species conservation
Types of management: grazing e.g. with cattle, sheep, horses, deer; cutting/mowing, rolling, chain-harrowing, harvesting cut material; burning, reference to burning code of conduct; creation and restoration methods

Grassland management objectives
Cultural objectives: aesthetics, recreational use (walking, horse-riding, dog-walking, bird watching, sports and other amenity use), agricultural value; crop (animal feed: grass, hay, silage.)
Ecological objectives: conservation value, rare or endangered habitats and species, preserving biological diversity, scientific value and use, buffer strips
Unit 312  Undertake Grassland Habitat Management
Outcome 4  Be able to carry out practical grassland habitat management

Assessment Criteria
The learner can:
1. Prepare equipment and resources for practical management of grassland habitats
2. Safely carry out practical management of grassland habitats in a given site
3. Recommend improvements to the management of grassland habitats

Unit content

Equipment and resources
Tractors, mowers, trailers and other mechanical equipment, livestock (cattle, sheep, horses, deer etc), hand tools, fencing equipment

Practical management
Mowing/cutting, weed control and invasive plant (tree and shrub) removal, harvesting (hay and silage), livestock handling, fencing, grassland creation and restoration, maintenance of established grasslands, soil preparation and drainage, pest control

Improvements to the management
Management planning, health and safety, risk assessment, human resources/volunteer work parties, public consultation including environmental interpretation
A range of techniques should be used in the delivery of this unit. Learners will benefit from lectures, guest speakers (for example from land managers and other practitioners of grassland habitat management), presentations, site visits, practical grassland management tasks including those undertaken during work experience placement, and research using library and internet sources.

Work experience placements should be monitored regularly in order to ensure the quality of the learning experience. Learners and their supervisors should be made aware of the requirements of this unit prior to any work-related activities so that naturally occurring evidence can be gathered at the time. For example, learners may have the opportunity to survey or carry out practical grassland management and they should be encouraged to request that observation records and/or witness statements are provided for evidence of this.

Whichever delivery methods are used, it is essential that tutors stress the importance of sound environmental management. Learners should know that some grassland species are protected by law and that licences from Natural England are required to handle them.

Health and safety issues relating to the integration of safe working practices and environmental good practice into all practical activities must be stressed and regularly reinforced, and risk assessments must be undertaken prior to practical activities.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments which learners are taking as part of their programme of study.

In Outcome 1, learners will gain an insight into the ecological and historical background of grasslands in the context of their development and current status. It is likely that this learning outcome will be delivered by formal lectures and group discussion. Ecosystem succession models should be explored in order to develop an understanding of dynamic systems in the natural environment. In particular, Vera's (1999) grazed forest model and the continuous woodland model should be explored in some detail.

An understanding of the ecology of grasslands is best delivered through specific site visits and, where possible, backed up by guided walks and talks from grassland habitat management practitioners. Where this is not possible, tutors should ensure that appropriate alternatives (for example, by using high-quality audio-visual resources) are used. The use of field identification keys is essential and there is an important link here to Outcome 2.

Outcome 2 provides learners with the skills and knowledge required to carry out surveys. It is expected that learners have access to at least one grassland site in order to accomplish this. The time of year is an important consideration when undertaking these surveys and therefore spring and summer are the recommended periods to do this.

Outcome 3 looks at the main methods employed in the management of grasslands. High quality audio-visual equipment can illustrate a variety of management tools, including both mechanical and the various forms of livestock which can be utilised. Access to local grassland sites is important to give learners first-hand experience of management methods. Most of this outcome can be delivered by lecture, informal discussion and group activity.

Outcome 4 is concerned with practical grassland management. Learners are now required to use the knowledge gained from the previous learning outcomes and apply it to a grassland site or sites.
References

Books


Websites

www.naturalengland.org.uk Natural England
www.wwt.org.uk Wildfowl and Wetlands Trust
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.grassright.co.uk The Grassright Group
Unit 313  Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of tree and shrub establishment and protection and how these can be put into practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or to further education and training.

The learner will understand the importance to society and the environment of tree establishment. The objectives of tree establishment, possible financial support and legal considerations will also be examined. The learner will also develop their understanding of the limitations of common establishment and protection methods and be able to develop their practical skills to establish and protect either amenity or forest trees.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the environmental and legal considerations relevant to tree establishment and protection
2. Be able to plan and prepare for successful amenity or forestry establishment
3. Be able to plant trees and shrubs
4. Know the aftercare requirements of trees and shrubs

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

TW4 Clear sites for tree planting
TW5 Cultivate sites for tree planting
TW6 Plant and establish trees
TW7 Carry out post-planting protection and maintenance
TW8 Control unwanted vegetation around trees

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.
Unit 313  Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Outcome 1  Understand the environmental and legal considerations relevant to tree establishment and protection

Assessment Criteria
The learner can:
1. Explain the benefits to society of tree establishment
2. Compare sources of financial support available for tree establishment and protection
3. Evaluate the environmental considerations associated with tree establishment and protection
4. Summarise the legal considerations associated with tree establishment and protection

Unit content

Benefits to society
Reduced pollution, improved air quality, increased employment prospects, increased visitors, increased property values, increased access to the countryside, healthier lifestyles, reduced energy consumption, financial benefits, regeneration of derelict and industrial land, improved landscapes, increased wildlife habitat and diversity

Financial support
Commercial loans, sponsorship, grants (e.g. Forestry Commission administered schemes)

Environmental considerations
Awareness of requirements under control of pollution legislation, oil and fuel spillage and storage, soil stability and erosion, soil compaction, nesting and breeding seasons, protected species, waste disposal, watercourses, archaeology, brash matting

Legal considerations
Warning symbols, risk assessment, operator training, Personal Protective Equipment (PPE), safety devices, pre-start checks, phytosanitary certification and import requirements
Unit 313 Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Outcome 2 Be able to plan and prepare for successful amenity or forestry establishment

Assessment Criteria
The learner can:
1. Select planting stock and materials
2. Evaluate methods of site preparation
3. Produce planting specifications
4. Carry out site clearance and preparation works

Unit content

Planting stock and materials
Stock types: bare-root, transplants, undercut, container grown, cuttings, whips, feathered trees, half-standards, standards

Methods of site preparation
Surface preparation: mowing, herbicide application, use of rotavators (pedestrian and tractor mounted)
Mechanical and soil preparation: ploughing and cultivation including subsoiling, use of borers (handheld and tractor mounted), use of tree spades, slitters, rotavators, spading machines
Hand preparation of soil: digging with spades, slitting

Planting specifications
Planting stock: species, quantity, quality and type
Planting method: mound planting, notch, pit planting, tree spades
Planting protection: tree shelters, fencing, guards, mulching
Equipment, storage and transport, planting density, fertilisers, irrigation

Site clearance and preparation works
Correct operation of appropriate manual, motor-manual or mechanised methods (dig, plough, rotavate, scarify, chip)
Maintain equipment appropriately: inspect and adjust, service, clean and store
Correct working techniques, correct operation of equipment, safe working practices, appropriate disposal of waste, prevention of pollution, minimise environmental impact
Unit 313  Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Outcome 3  Be able to plant trees and shrubs

Assessment Criteria
The learner can:
1. Plant bare-root and containerised stock safely
2. Provide appropriate support and immediate aftercare to trees safely

Unit content

Plant bare-root and containerised stock safely
Undertake site clearance and preparation works: correct operation of appropriate manual, motor-manual or mechanised methods (dig, plough, rotavate, scarify, chip)
Maintain planting equipment: inspect and adjust, service, clean and store
Appropriate planting method: mound planting, notch, pit planting, tree spades
Plant trees: work to planting specifications, check stock against order, correct transport and storage, distribution to ensure efficient planting, appropriate planting density and depth (too deep cultivation leads to a plant slumping in a planting hole), correct working techniques, safe working practices, appropriate disposal of waste, leave worksite in a tidy condition, prevention of pollution, minimise environmental impact

Appropriate support and immediate aftercare
Support: stakes, frames, guys, ground anchors, treeshelters
Aftercare: fertilisers, irrigation, pruning, pesticides, mulch
Unit 313  Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection
Outcome 4  Know the aftercare requirements of trees and shrubs

Assessment Criteria
The learner can:
1. Describe methods of protecting trees
2. Review the use of tree supports
3. Describe the aftercare requirements of trees

Unit content

Methods of protecting trees
Protection methods: treeshelters, fencing, guards, mulching, tree cages

Use of tree supports
Supports: guys, anchors, stakes, guards

Aftercare requirements of trees
Aftercare: inspection, beating-up, nutrition, formative pruning requirements, irrigation, mulching, adjustment/removal of support, weeding/competition management, use of pesticides
Unit 313  Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Notes for guidance

This unit is designed to provide the learner with the sound knowledge and skills required to successfully establish and protect trees appropriate to the area of study. The unit should cover as wide a range of establishment and protection techniques as possible, appropriate to the area of study as well as those locally or regionally significant to the learner.

Throughout the unit, the emphasis should be on safe working and sound environmental practices. It is expected that the learner will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working. It is a requirement for learners to operate machinery to clear and prepare sites for planting therefore health and safety issues relevant to the machinery used must be stressed and regularly reinforced. The learner should be actively involved in comprehensive risk assessment. Adequate Personal Protective Equipment (PPE) appropriate to the learner, the machinery and the task must be provided and worn in accordance with the associated risk assessment, industry guidance and operator's manual. It is not necessary for the learner to use fertilisers, pesticides or other methods of tree protection which require legal approval. Simulation and demonstration could be used to illustrate appropriate methods and equipment which are commonly used, but which are unavailable to the learner.

In Outcome 1, the learner will be required to understand the environmental and legal considerations appropriate to tree establishment and protection. It is accepted that this outcome will require formal delivery but it should be primarily delivered in practical situations and linked to the delivery of the other learning outcomes in this unit.

In Outcome 2, the learner will be required to successfully plant and establish either amenity or forest trees. The range of planting stock may vary according to the planting sites and associated specifications, but learners should plant at least two types of planting stock, using two planting methods and two types of tree protection, which are appropriate to their area of study. This work should be undertaken on a minimum of two different sites.

In Outcome 3, the learner will be required to successfully plant trees and shrubs. The range of planting stock may vary according to the planting site and associated specification, but this work should be undertaken on a minimum of two different sites. The learner should have access to sufficient planting stock and equipment in a realistic industrial situation.

In Outcome 4, the learner will be required to know the aftercare requirements of trees and shrubs. It is anticipated that the delivery of this outcome will require some formal delivery, but it should be primarily delivered in practical situations. The learner should be given the opportunity to visit established planting schemes and review the range of aftercare, support and protection methods and techniques available.

A learner working towards level 3 is likely to have experience of practical forestry or arboricultural activities. This unit aims to extend the learner's knowledge and skills involved with ensuring the successful establishment and protection of healthy trees and forests. Emphasis should be placed not only on 'doing', but also upon the importance of planning and strategies to ensure safe, efficient and effective operations. It is important that the learner understands the importance of maintain an awareness of current legislation and Codes of Practice in relation to establishment and protection work.

Centres are encouraged to introduce employers and specific professionals from the forestry and arboriculture industries to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of working sites and trade shows to add depth to the learner's experience. In addition,
current and topical issues regarding tree establishment and protection should be highlighted as and when they arise.

It is anticipated that the delivery of this unit will be delivered through supervised practical training and the learner be able to consolidate operational skills within realistic working environments. The unit should be delivered throughout the year, with consideration given to appropriate seasonal aspects of tree planting and the impact of weather extremes on operations.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are linked directly with interactive practical lessons in a real environment. The learner must be given the opportunity to work with a range of equipment and machinery in different establishment situations which reflects current industry practice.

References

Books


Arboriculture and Forestry Advisory Group (AFAG) Safety Guides.

Journals

Arboricultural Association newsletter
Forestry and British Timber
Quarterly Journal of Forestry
Unit 314  Understanding Coastal Management

Level: 3
Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of coastal management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to provide learners with an understanding of the processes affecting the coastal zone and the management of coastal habitats.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the physical processes affecting coastal habitats
2. Be able to carry out ecological surveys of coastal habitats
3. Know the threats to coastal habitats
4. Understand suitable coastal management techniques

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 314  Understanding Coastal Management
Outcome 1  Understand the physical processes affecting coastal habitats

Assessment Criteria
The learner can:
1. Discuss the **structural features** of coastal habitats
2. Explain the **influences** of relevant **physical processes** on coastal habitats

Unit content

**Structural features**
Cliffs, cliff top land, beaches, spits, sand dunes, mudflats, sandflats, salt marshes, estuaries, caves, blow holes, sea stacks

**Influences**
Effects of erosion (altering physical structures, creating new structures, for example sea stacks, loss of habitat, upstream pollution, changes to water course)
Effects of sediment redistribution (creation of new habitats, loss and changes to habitats)

**Physical processes**
Influence of tide (erosion, sediment redistribution) and wind (erosion)
**Unit 314 Understanding Coastal Management**

**Outcome 2** Be able to carry out ecological surveys of coastal habitats

**Assessment Criteria**

The learner can:

1. Identify *indicator species* of selected coastal habitats
2. Complete *ecological surveys* of selected *coastal habitats* using appropriate methods

**Unit content**

**Indicator species**

As appropriate to habitat for example seaweeds, crustaceans, fish, molluscs, shellfish, invertebrates

**Ecological surveys**

Quantitative (for example quadrats and simple line transects) and qualitative (quality of habitat, species distribution), correlation of species and effects of abiotic factors

Risk assessment: Identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk

Present information from surveys in various forms (written, data and pictoral) graphs, pie chart, basic statistics

**Costal habitats**

Inter-tidal, fore shore, cliff and cliff top, sand dunes, mud flats, sand flats, estuary
Unit 314 Understanding Coastal Management
Outcome 3 Know the threats to coastal habitats

Assessment Criteria
The learner can:
1. Evaluate the threats to coastal habitats
2. Explain the effects of threats on coastal habitats

Unit content

Threats

Natural threats
Erosion (tide based, wind based), sediment movement and deposits

Human threats
Pollution, tourism, access requirements, sea defences affecting sediment movement, changes affecting rivers (e.g. building on flood plains, flood defences, redirecting rivers), and land use adjacent to rivers (e.g. for agriculture, for recreation and sport)

Effects
Loss of habitat, habitat creation, consequential effects on other parts of the coast, loss of landscape, property loss, cost, loss of tourism
Unit 314  Understanding Coastal Management
Outcome 4  Understand suitable coastal management techniques

Assessment Criteria
The learner can:
1. Explain the importance of *legislation* and *planning* for managing the coastal zone
2. Discuss the uses of *practical management* techniques for protecting coastal habitats

Unit content

**Legislation**

**Planning**
Setting coastal management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

**Practical management**
Use of permanent engineered structures, for example breakwaters, groynes, revetments, seawalls
Consequential effects to other coastal areas
Use of natural processes and materials, for example beach recycling, beach re-nourishment, dune grass planting and marsh regeneration, footpaths
Unit 314 Understanding Coastal Management

Notes for guidance

This unit will provide the learner with the knowledge of how our coasts are constantly changing and how man and nature try to control the erosion and formation of the terrestrial landmass. By studying the coastal features which are so important for many migratory species learners will be able to see how fragile the habitats are to changes in land use human recreation and the weather. Global warming predicts a rise in sea level and it is likely that this will have a dramatic effect on existing coastal zones and in the creation of new coastal habitats. It is therefore vital to understand the natural processes to try to manage the change.

Learners will gain knowledge and understanding though formal lectures and case studies where man has ignored the coastal movement of material. For example, Dungeness, slitting up of ports and so on and how natural habitat features are being recreated to act as flood prevention (Essex coasts). Field trips to see similar examples are encouraged. The costal habitats will be studied and surveyed both qualitatively and quantitatively.

In Outcome 1 the learner will cover the typical features of the coastal zone around Britain and how they change due to the weather and man’s activities.

Outcome 2 builds upon the previous outcome and looks at a specific coastal habitat, identifying the indicator species of that habitat as part of a qualitative survey. Research and survey of the main abiotic factors that control the habitats growth or decline is required, which can be carried out from a desk top survey from maps and photographs.

Having identified potential threats to coastal habitats in Outcome 3 the learner needs to understand how legislation plays a part in managing the coastal zone via planning and environmental protection acts, including species protection. In Outcome 4, with the real threat of the sea level rising, the learner needs to review current coastal management practices and suggest new practical methods to sustain habitats wild life and mans land use requirements.

In Outcome 4, learners will gain an understanding of coastal management techniques. The delivery of this outcome will predominantly be theory-based, but real examples could be used to illustrate practical management techniques. The delivery of this outcome would benefit from visits to coastal sites to add depth to the learner experience.

The unit is has a small practical element for which a risk assessment and safe working practices must be observed, but is mostly theory and will allow the learner to make informed decisions on coastal land use and management if and when the sea level raises.

References

Books

Gubbay S (1989) Coastal and sea use management, reviews of approaches and techniques, Marine Conservation Society
Gubbay (1990) Future of the Coast proposals for the UK coastal zone
Websites

www.defra.gov.uk The Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.naturalengland.org.uk Natural England
www.rspb.org.uk The Royal Society for the Protection of Birds
Unit 315  Understand Deer Management

Level:  3

Credit value:  10

Unit aim

This unit aims to introduce learners to the skills and knowledge used in deer management and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes

There are three learning outcomes to this unit. The learner will:
1. Be able to identify wild UK deer
2. Understand the ecology and associated behaviour of UK deer
3. Understand the management of wild deer.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga23 Contribute to deer management planning

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.
Unit 315  Understand Deer Management

Outcome 1  Be able to identify wild UK deer

Assessment Criteria
The learner can:
1. Identify the six deer species found in the UK
2. Describe features of deer used to identify the sex
3. Describe features of deer used to identify age

Unit content

Six deer species
Red, sika, fallow, roe, muntjac, Chinese water deer

Features used to identify sex
Antlers, pizzle, tush, tusks, udder

Features used to identify age
Teeth, build, stance, antlers, size, pelage
Unit 315  Understand Deer Management
Outcome 2  Understand the ecology and associated behaviour of UK deer

Assessment Criteria
The learner can:
1. Review the annual life cycle of the six deer species found in the UK
2. Explain the breeding ecology of the six deer species found in the UK
3. Compare the habitat preferences of the six deer species
4. Evaluate signs of deer presence in an area

Range

Six deer species
Red, sika, fallow, roe, muntjac, Chinese water deer

Unit content

Annual life cycle
Rut, birth, antler casting and growth, movement, territories

Breeding ecology
Monogamy, polygamy, rutting behaviour

Habitat preferences
Broadleaved woodland, coniferous forest, open hill, farmland

Signs
Tracks, faeces, scrapes, fraying, fur, browsing
Unit 315  Understand Deer Management
Outcome 3  Understand the management of wild deer

Assessment Criteria
The learner can:
1. Outline the legal requirements that control the management of deer
2. Describe how given common and statutory laws apply to the management of UK wild deer
3. Specify the legal requirements that control the management of deer
4. Outline current deer management codes of practice
5. Summarise the requirements of a deer management plan

Unit content

Legal requirements
Seasons, legal firearms, Health and Safety, food hygiene

Common and statutory laws

Codes of practice
Deer initiative best practice guides

Deer management plan
Setting deer management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements
Unit 315 Understand Deer Management

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required in deer management.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

For Outcome 1 learners must identify wild UK deer by species, sex, and age. They must also describe the condition of selected deer using correct terminology. Learners are expected to identify all six UK wild deer species. Since all species are not usually available at any one site, the use of good quality audio-visual materials might be necessary to cover the full range. Tutors should identify the specific sites and learners should be encouraged to develop their identification skills at every opportunity when out on practicals or visits.

In Outcome 2 learners will explain wild UK deer ecology and behaviour. They should describe those aspects of deer ecology and behaviour that identify deer as a group, differentiating them from other mammals that the learners might be familiar with. This outcome would lend itself to a practical survey of habitats on an estate with an assessment of how valuable each one is for the deer species found there. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

Outcome 3 requires learners to outline the common and statutory frameworks that affect wild UK deer and their habitats. As a minimum, learners should cover major legal influences on game/wildlife management in the UK. Learners should be encouraged to undertake some research in this area, along with formal teaching. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner.
References

Books


Websites

www.defra.gov.uk The Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.thedeerinitiative.co.uk The Deer Initiative
Unit 316  Understand Deer Population Monitoring and Management Plans

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to deer monitoring and management skills and knowledge and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

The learner will have the knowledge and skills required to generate baseline data for deer populations, to observe, analyse and predict change and to formulate action plans.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand appropriate census methods for deer
2. Be able to carry out deer census techniques
3. Understand how deer impact on habitats
4. Understand the requirements of a deer management plan

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga23 Contribute to deer management planning

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 316  Understand Deer Population Monitoring and Management Plans

Outcome 1  Understand appropriate census methods for deer

Assessment Criteria
The learner can:
1. Describe the direct methods commonly used to survey deer populations
2. Describe the indirect methods commonly used to survey deer populations
3. List equipment required to carry out a deer survey
4. Specify the information and calculations required to estimate a deer population
5. Identify the types of records required and the importance of accurate record keeping

Range
Red, sika, fallow, roe, muntjac

Unit content

Direct methods
Open range counting, vantage point counts, dung counts, reproductive success rates

Indirect methods
Faeces, tracks, browsing, fraying, bark stripping, ground flora degradation, loss of woodland structure, deer road traffic collisions, crop damage

Equipment
Radios/walkie talkies, binoculars, telescopes, Global Positioning System (GPS), digital cameras, notebooks, pencils, maps, markers, Health and Safety equipment

Information
Area covered, time of year, method used, deer species, sexes, age

Calculations
Deer density indicators using tracks, browsing of vegetation, dung including counting

Types of records
Location, time of year, description of area including boundary factors and management, species present, cull figures, deer road traffic collisions, previous survey results, computer, manual, photographic

Importance of accurate record keeping
Setting culling targets, population trends, sex/age classification of the population
Unit 316  Understand Deer Population Monitoring and Management Plans

Outcome 2  Be able to carry out deer census techniques

**Assessment Criteria**
The learner can:
1. Carry out **direct methods** commonly used to survey deer populations
2. Carry out **indirect methods** commonly used to survey deer populations
3. Analyse the information and **calculate** deer population for a **given area**
4. Present the survey records required for a **deer management plan**

**Range**
Red, sika, fallow, roe, muntjac

**Unit content**

**Direct methods**
Open range counting, vantage point counts, dung counts

**Indirect methods**
Faeces, tracks, browsing, fraying, bark stripping, ground flora degradation, loss of woodland structure, deer road traffic collisions, crop damage

**Calculate**
Deer density indicators using tracks, browsing of vegetation, dung including counting

**Given area**
Lowland, upland, woodland

**Deer management plan**
Populations, culls, welfare, damage, habitat information and impacts
Unit 316  Understand Deer Population Monitoring and Management Plans

Outcome 3  Understand how deer impact on habitats

Assessment Criteria
The learner can:
1. Describe how deer impact on differing habitats
2. Explain the techniques used to assess the impact of deer on different habitats
3. Carry out a deer habitat impact assessment on a given area
4. Identify the types of records required and the importance of accurate record keeping
5. Identify methods of protecting habitats from the impact of deer

Range
Red, sika, fallow, roe, muntjac

Unit content

Habitats
Woodland, unimproved grassland, rides and open ground, dwarf shrub heath, blanket bog, flushes and springs, willow scrub, tall herbs

Techniques
Define habitat, quadrats, damage and condition

Impact
Key species, damage, fraying, bark stripping, ground flora degradation, loss of woodland structure, crop damage; unpalatable plants

Given area
Lowland, upland, woodland

Records
Manual, computerised, photographic; browsing, fraying, bark stripping, ground flora degradation, loss of wood and structure, deer road traffic collisions, crop damage

Methods of protecting habitats
Culling, fencing, supplementary feeding, establishment of deer glades, chemical protection, individual guards, ride management
Unit 316  Understand Deer Population Monitoring and Management Plans

Outcome 4  Understand the requirements of a deer management plan

Assessment Criteria
The learner can:
1. Explain the principles of deer management
2. Identify the types of records required and the importance of accurate record keeping
3. Explain deer population modelling as required for a management plan
4. Explain the management plan requirements of objectives for:
   • the short term
   • the long term
   • population management
   • habitat management
5. Specify the sources of advice and information that are available to support the management of deer populations

Range

Red, sika, fallow, roe, muntjac

Unit content

Principles
Protect valued wild plant communities, contain damage to commercial crops (farming and forestry) and to ornamental produce, reduce incidence of road traffic collisions involving deer, biodiversity

Types of records
Location, time of year, description of area including boundary factors and management, species present, cull figures, deer road traffic collisions, previous survey results; computer, manual, photographic

Importance of accurate record keeping
Setting culling targets, population trends, sex/age/classification of the population

Management plan
Populations, culls, welfare, damage, habitat information and impacts

Short term
1-2 months

Long term
5 years+

Sources of advice and information
Unit 316  Understand Deer Population Monitoring and Management Plans

Notes for guidance

Upon completion of this unit, the learner will have the knowledge and skills required to generate baseline data for deer populations, to observe, analyse and predict change and to formulate management plans.

Tutors delivering and assessing this unit should use as wide a range of techniques as possible. Lectures, discussions, seminar presentations, site visits, supervised deer related practicals, research using the internet and/or library resources and the use of personal industrial experience could all be used. It is expected that wherever possible practical methods will be used both to train and to assess.

Visiting speakers could add to the relevance of the subject for the learners’ e.g. a deer manager or deer initiative/deer commission officer could talk about their work, the situations they face and the methods they use.

Whichever delivery methods are used it is essential that tutors stress the importance of animal welfare, sound environment management and the need to manage the resource using legal methods. Health and safety issues relating to working in an outdoor environment and handling animal material must be stressed and regularly reinforced and risk assessments must be undertaken prior to practical activities. Adequate Personal Protective Equipment (PPE) must be provided and used following the production of suitable risk assessments.

Outcome 1 is mainly a theory based unit where learners are required to research into the commonly used methods to survey deer populations. Learners are required to describe how to carry out deer surveys, the types of equipment used and the records that are kept. The outcome should be delivered through a series of formal lectures, directed study, internet and library associated research.

Outcome 2 requires the learner to survey deer populations, record, analyse and present the information. The outcome requires practical surveying and centres must ensure that an appropriate risk assessment has been carried out and recorded. All learners must be provided with suitable PPE. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely. Practical activity to collect data could be over a period of time. The time of year will depend on the reason for the count. Usually it is desirable to count the calves that have survived winter and to count stags before they cast. For most counts the best conditions will be white ground (snow – lie) where contrast between deer and their background will be maximised enabling deer to be more easily spotted. The best months are therefore likely to be February, March or April. It is usually desirable to count at least annually at the same time of year. More frequent counts may be required particularly if looking at deer movements.

Outcome 3 requires the learner to understand how deer impact on a range of differing habitats. Learners must carry out a practical impact assessment on one defined habitat during the recommended months for the particular habitat e.g. May-July for willow scrub. Learners must identify the key plant species and impacts but be aware of ground nesting birds avoiding any disturbance. Delivery will include a mix of formal lectures and practical sessions. Theory delivery can be through a series of formal lectures, directed study, internet and library associated research. Where practical activities are used health and safety issues relating to working in an outdoor environment and handling animal material must be stressed and regularly reinforced and risk assessments must be undertaken and recorded prior to practical activities. Adequate PPE must be provided. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely.
The aim of the unit is to develop knowledge, understanding and practical experience in the management of deer. Emphasis should be, at all times, on the health, safety and wellbeing of the animals, plants and the learner. Learners should work individually to analyse data but could work in groups to obtain the data required for the practical activities. Centres are encouraged to use a range of methods for delivery and assessment to ensure full coverage of the requirements of the unit. Work experience would be beneficial for those wishing to pursue a career in this field.

References

Books


Websites

www.forestry.gov.uk The Forestry Commission
www.countryside.gov.uk Natural England
www.thedeerinitiative.co.uk The Deer Initiative
www.bds.org.uk The British Deer Society
www.english-nature.org.uk English Nature
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
Unit 317 Understand Ecological Concepts and Application

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills and knowledge needed for ecological concepts and application, and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

The learner will investigate the theoretical concepts of ecology, and consider the practical applications of these concepts in the field. They will plan and carry out ecological surveys of plants and animals and develop their understanding of the behaviour and relationships these reveal.

Learning outcomes

There are four learning outcomes to this unit. The learner will:

1. Understand the principles of behavioural ecology for life history strategies
2. Understand the principles of population dynamics at the levels of island biogeography and metapopulations
3. Be able to plan and carry out ecological surveys for plants
4. Be able to plan and carry out ecological surveys for animals

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC23 Prepare, conduct and report on field surveys
EC23.3 Interpret survey data and report on findings

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.
Unit 317  Understand Ecological Concepts and Application
Outcome 1  Understand the principles of behavioural ecology for life history strategies

Assessment Criteria
The learner can:
1. Explain aspects of behaviour that influence reproductive success
2. Evaluate relationships between parental investment and breeding systems.

Unit content

Aspects of behaviour
Prey/predator relationships, competition, social systems, behaviour: reproductive (maternal, paternal), social, territorial, communication
Influences on behaviour (scales, individuals, species, communities, ecosystems, habitats, nutrient cycles, tropic levels, niches, natural selection mating systems)

Parental investment
Paternal, maternal, social groups, time, energy

Breeding systems
Random or chance matings, selective (social/hierarchy related), matings, monogamy, polygamy, K and breeding strategies
Unit 317  Understand Ecological Concepts and Application
Outcome 2  Understand the principles of population dynamics at the levels of island biogeography and metapopulations

Assessment Criteria
The learner can:
1. Explain the metapopulation cycle with reference to selected examples
2. Assess how habitat fragmentation might lead to local extinction

Unit content

Metapopulation cycle
Increases and decreases, dissolution, emergence, physical and abiotic factors that influence metapopulations: growth, dispersion, genetic variability, continuity in time
Factors that influence populations: size, form, resources, demes, fluctuations, environment, predictable changes (e.g. seasonality), isolation
Biotic factors: evolutionary age communities, primary productivity, community structure and competition, fecundity, natality, mortality, immigration, emigration, breeding strategies (r and K)

Habitat fragmentation
Human influence: agriculture, industry, regeneration, urbanisation, leisure use, deforestation
Non-human influence: natural disasters, seasonal events e.g. monsoons, flooding, plant succession
Unit 317  Understand Ecological Concepts and Application
Outcome 3  Be able to plan and carry out ecological surveys for plants

Assessment Criteria
The learner can:
1. Plan surveying of a given National Vegetation Classification (NVC) community
2. Carry out surveying of a given NVC community
3. State the potential sources of error

Unit content

Surveying
Objective setting and planning, risk assessment: Identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk, health and safety, legislation, codes of practice
Sampling (quadrat, kick, transect) Phase 1 surveys, habitat surveys, species surveys, data analysis methods.
Present information from surveys in various forms (written, data and pictoral) graphs, pie chart, basic statistics

Potential sources of error
Experimental, human, statistical, equipment
Unit 317  Understand Ecological Concepts and Application
Outcome 4  Be able to plan and carry out ecological surveys for animals

Assessment Criteria
The learner can:
1. Plan surveying of a given animal or animal species group
2. Carry out surveying of a given animal or animal species group
3. State the potential sources of error.

Unit content

Surveying
Objective setting and planning, risk assessment: identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk, health and safety, legislation, codes of practice
Sampling (quadrat, kick, transect), Phase 1 surveys, habitat surveys, species surveys, data analysis methods.
Present information from surveys in various forms (written, data and pictorial) graphs, pie chart, basic statistics

Potential sources of error
Experimental, human, statistical, equipment
Unit 317  Understand Ecological Concepts and Application

Notes for guidance

This unit is designed to enable the learner to investigate the theoretical concepts of ecology, and consider the practical applications of these concepts in the field. They will plan and carry out ecological surveys of plants and animals and develop their understanding of the behaviour and relationships these reveal.

This unit should consider a range of habitats and species (plants, mammals, reptiles, amphibians, invertebrates, birds) and should aim to take advantage of the local biogeography to enable the learner to fully engage with their community’s ecology.

Throughout the unit the emphasis should be on the contextualisation of the principles of ecology discussed into real examples to enable the learner to fully engage with the concepts discussed. Safe working practices and compliance with relevant legislation, Codes of Practice and health and safety should be emphasised before and during practical surveying.

Outcome 1 encourages the exploration of the principles of behavioural ecology and should be discussed with reference to local, national and international contexts. Delivery is expected to be formal but should be complimented by practical activities, videos and case studies to encourage the learner to contextualise.

Outcome 2 encourages the exploration of the principles of population dynamics and should be discussed with reference to a range of examples, and should include consideration of the interrelationship of plant and animal (mammals, birds, insects and reptile) species. Delivery is expected to be formal but should be complimented by practical activities, videos and case studies to encourage the learner to contextualise the factors covered. Current and topical issues in population dynamics and conservation should be highlighted.

In Outcome 3 the learner will develop basic surveying abilities and practical opportunities to develop core skills are necessary to compliment formal delivery. A range of habitats should be available for study and a variety of sampling methods practically undertaken. Learners should be encouraged to plan, undertake and reflect on sampling in reference to method, sources of error, results, conclusions drawn, legislation and health and safety.

Outcome 4 continues with development of practical ecological surveying skills. Again practical opportunities to develop core skills are necessary to compliment formal delivery. A range of habitats that incorporate access to numerous animal species should be available for study and a variety of sampling methods practically undertaken. Learners should be encouraged to plan, undertake and reflect on sampling in reference to method, sources of error, results, conclusions drawn, legislation and health and safety.

Learners working towards Level 3 are expected to have underpinning knowledge in animal and plant biology should be able to relate this to the subjects studies in this unit. This unit aims to build upon foundation knowledge to discover the complex relationships that exist within the natural world and how these influence populations of both plants and animals. Equal emphasis should be placed on the development of practical skills and the necessary knowledge to be able to interpret the results of surveys and contextualise these into short and long term impacts on populations and ecosystems. It is important that the learner understands the influence of legislation, Codes of Practice and health and safety in respect of ecological surveying.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of habitats to add depth to the learner experience.

It is accepted that formal lectures will be necessary at Level 3 but for this unit it is necessary to compliment this with practical opportunities and recommended to introduce interactive sessions in a real environment.
References

Books

Journals
Journal of Ecology
Ecology
Behavioural Ecology
Sustainable Development
Ecologist

Websites
www.ecology.com The Ecology Global Network
www.nhm.ac.uk The Natural History Museum
www.globalissues.org.uk Global Issues
Unit 318  Understanding Land Use and Environmental Issues

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of environmental issues and policies and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will consider different land uses in the UK and the organisations and laws involved. They will explore the aims and effects of rural policies on land management and the impact of industry and agriculture on the modern natural environment. They will look at the development of energy and changes to biodiversity as a result of these activities.

Learning outcomes

There are five learning outcomes to this unit. The learner will:
1. Know land uses in the UK
2. Understand the effect of rural policy, organisations and legislation associated with land use in the UK
3. Understand the impact of industry and agriculture on the natural environment in the UK
4. Understand the development of energy production and use
5. Understand changes to biodiversity.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 318Understanding Land Use and Environmental Issues
Outcome 1 Know land uses in the UK

Assessment Criteria
The learner can:
1. Describe the main land uses in the UK
2. Outline organisations associated with land use in the UK
3. Describe legislation associated with land use in the UK.

Unit content

Main land uses
Agriculture, industry including power, forestry, transport, housing, leisure

Organisations
Department for Environment, Food and Rural Affairs (Defra), Welsh Assembly Government, Scottish Executive Environment and Rural Affairs Department, Department of Agriculture and Rural Affairs (Northern Ireland), Environment Agency, Welsh Assembly Government, non government organisations (for example BTCV, Farming and Wildlife Advisory Group (FWAG), Linking the Environment and Farming (LEAF), Organic Farmers and Growers, Royal Society for the Protection of Birds (RSPB), Save our Songbirds, Soil Association, local Wildlife Trusts, Woodland Trust, Natural England, Farming and Countryside Education

Legislation
Unit 318  Understanding Land Use and Environmental Issues
Outcome 2  Understand the effect of rural policy, organisations and legislation associated with land use in the UK

Assessment Criteria
The learner can:
1. Explain the aims of selected rural policies
2. Explain the effects of selected rural policies on land management.

Unit content

Rural policies
Current Natural England, Environment Agency and Defra policies, such as Economic and Social Regeneration, sustainability, Regional Development Agency policies, social justice for all, enhancing the value of our countryside

Effects
Changes to land use, farming practices, landscape development, tourism and public access, effects on budgets (income and expenditure), changes to labour use and employment, changes to habitat availability, species distribution and dynamics
Unit 318  
Understanding Land Use and Environmental Issues

Outcome 3
Understand the impact of industry and agriculture upon the natural environment in the UK

Assessment Criteria
The learner can:
1. Explain how the development of selected agricultural and industrial activities, have impacted on the natural environment.

Unit content

Agricultural activities
Conventional farming practices: history of farming practices, landscapes and land management, suitable selection for example crop and livestock enterprises using routine and preventative treatments
Sustainable farming practices: those aiming to reduce the environmental impact, for example organic, permaculture, biodynamic farming

Industrial activities
Mining, quarries, timber production and processing, power production, manufacturing, processing

Impacted on natural environment
Visual, noise, physical (for example waste, pollution control, impact on topography), consumption of raw materials and energy, impact on plant and animal species, immediate and long term impact
Reduction of negative environmental impact: energy consumption, pollution, use of resources, use of chemicals and medicines
Unit 318 Understanding Land Use and Environmental Issues
Outcome 4 Understand the development of energy production and use

Assessment Criteria
The learner can:
1. Explain the development of conventional fossil fuel, nuclear and sustainable energy sources
2. Discuss the relative impacts of conventional fossil fuel, nuclear and sustainable energy sources on the natural environment.

Unit content

Energy sources
Coal, oil gas, burning wood plants and waste, solar, wind, wave and Hydroelectric Power (HEP)

Impacts
Visual, noise, physical (for example waste, pollution control, impact on topography), consumption of raw materials and energy, disturbance, habitat loss, damage and death to biodiversity, impact on plant and animal species, immediate and long term impact
Reduction of negative environmental impact: energy consumption, pollution, use of resources, use of chemicals and medicines
Unit 318  
Understanding Land Use and Environmental Issues  
Outcome 5  
Understand changes in biodiversity

Assessment Criteria  
The learner can:  
1. Explain biodiversity changes in a selected world biome and in a selected UK habitat.

Unit content

Changes  
Communities, populations, abiotic factors

World biome  
Aquatic, grassland, desert, forest and tundra

Selected UK habitat  
Upland, lowland, freshwater (ponds, lakes, reservoirs, reed beds), coastal (beaches, sand dunes, rockpools, mud-flats, buffer zones), wetland (marsh, peat bogs), grassland, heathland, meadows, woodland (ancient, deciduous, evergreen, mixed), hedgerows, rural, semi-rural, urban
Unit 318  Understanding Land Use and Environmental Issues

Notes for guidance

This unit will provide the learner with the knowledge of how the British landscape is moulded by land use policy, and that wildlife conservation must be managed on a landscape style rather then just in nature reserves. Multi-use of land will be reviewed with the needs of each land use balanced with others to give the mosaic of habitats that is currently the British Isles. The influencing policies of land use, legislation and best practice guide lines presented by Government and Non Government Organisations will be addressed. The future conflicts surrounding the need for (renewable) energy and the effect on surrounding land use and the NIMBY factor will be investigated. Learners will learn though lectures, case studies and visits to proposed and existing energy sites so they can form an opinion on future land use policy.

In Outcome 1 learners will look at the major land uses of Britain’s farming, forestry and mining, industry, energy, transport, urban tourism and the Government and Non-Government Organisations trying to influence their management and legislation having the most impact on them.

In Outcome 2 the learner will look at rural policy where human need and countryside policy clash. The learner will also cover how to justify destruction of landscapes in and out of national parks to meet the local economic development and national need for resources, and the impact of this on some of Britain’s most amazing habitats.

Outcome 3 looks more closely at environmental impact assessments for land use with special reference to farming and industry and the effect that land use policies have on positive and negative impacts on wildlife.

In outcome 4 the learner will research the British energy industry looking at percentage power production and whether we are self sufficient to meet our energy demand. The predicted level of energy use for the future and how International targets can be achieved within current or new land use policy will be covered.

Outcome 5 will allow the leaner to reflect on the environmental impact of land use, in particular the wildlife cost and benefit that land use will bring now and in the future.

Once the unit is complete then the learner will be able to make personal choices on future policy from an informed position to try to balance our need and desire of resources and detrimental effect we have on them.
References

Books


Websites

www.defra.gov.uk  Department for Environment, Food and Rural Affairs
www.wales.gov.uk  Welsh Assembly Government
www.scotland.gov.uk  Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk  Department of Agriculture and Rural Affairs (Northern Ireland)
Unit 319  Understanding the Principles of Game Management

Level: 3

Credit value: 10

Unit aim
This unit aims to provide learners with an understanding of the principles of game management in the UK. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

This unit provides the knowledge and understanding of internal and external influences associated with the game management industry. Learners will investigate how game management has shaped the countryside and will evaluate the main legislative acts and codes of practice along with the role of organisation associated with the industry.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Understand the physical influences of game management on the UK countryside
2. Know the social and ethical arguments for and against field sports
3. Know laws and codes of practice relating to game management in the UK
4. Know the roles of organisations associated with game management in the UK.

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
Ga1 Assist in game shooting activities

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 319  Understanding the Principles of Game Management
Outcome 1  Understand the physical influences of game management on the UK countryside

Assessment Criteria
The learner can:
1. Outline how habitats are managed for game
2. Summarise the creation of habitats for game species
3. Discuss the impact of game management on other species
4. Discuss the impact of introduction of non-native species
5. Discuss the possible reintroduction of once native species

Unit content

Habitats
Farmland, forest and woodland, moorland, wetlands, heathland
Features: topography, structure, water habitats, size and layout, cover, presence of other species, food availability and source, predator presence or absence

Creation
Planting, sowing, field margins, cover crops, new woodlands

Impact
Positive: retention and management of semi-natural habitats in upland and lowland areas, provision of new habitats, cover crops, likely future influences
Negative: impact on other species for example the control of pest and predator species, introduction of non-native species
Unit 319  Understanding the Principles of Game Management
Outcome 2  Know the social and ethical arguments for and against field sports

Assessment Criteria
The learner can:
1. Outline the **historical development** of field sports in the UK
2. Discuss the **impact on the rural economy** of field sports
3. Describe the **influence** of field sports on habitats
4. Summarise **arguments** of anti field sports pressure groups

Unit content

**Historical development**
Neolithic, Norman hunting forests, medieval hunting, flintlock firearms, breech loading shotguns, Edwardian shooting, commercialisation, changes to hunting (legislation and social pressures)
Types and categories of field sports (shooting, hunting, fishing), modern field sports associations, professional bodies, roles within professional field sports, training and education

**Impact on the rural economy**
Direct value of, field sports, multiplier effects, economic assessment of field sports, numbers employed, number of participants, impact on and interaction with landowners

**Influence**
Maintenance of existing habitats, creation of new habitats, management of endangered species habitats, woodlands, farmland, wetlands, moorland

**Arguments**
Ethics, killing for fun, utilitarian, elitism, alternative methods of controlling pest species, ‘natural balance’, cruelty to animals, animal protection
Unit 319 Understanding the Principles of Game Management
Outcome 3 Know laws and codes of practice relating to game management in the UK

Assessment Criteria
The learner can:
1. Outline the Acts of Parliament associated with game management in the UK
2. Review game management codes of practice

Unit content

Acts of Parliament

Codes of practice
Code of good shooting practice, respect for quarry
Unit 319 Understanding the Principles of Game Management

Outcome 4 Know the roles of organisations associated with game management in the UK

Assessment Criteria
The learner can:
1. Discuss the role of Government organisations and agencies
2. Discuss the role of Non Governmental Organisations (NGOs)
   - Political
   - Research
   - Advisory
   - Businesses

Unit content

Government organisations
Defra, Food Standards Agency, Natural England, Forestry Commission, Deer Initiative

Non Government Organisations
For example British Association for Shooting and Conservation (BASC), National Gamekeepers Organisation (NGO), Game and Wildlife Conservation Trust (GWCT), The Countryside Alliance (CA), Masters of Foxhounds Association (MFHA), Royal Society for the Protection of Birds (RSPB), League Against Cruel Sports (LACS)
Unit 319  Understanding the Principles of Game Management
Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Outcome 1 requires the learner to be familiar with the influence of game management on the British countryside, exploring both the positive and negative aspects of a range of game management techniques on specific habitats. This may be best studied as an investigation of the species and habitats found on a local estate. They will also study the methods and associated activities commonly used to manage game habitats. Visiting expert speakers could add to the relevance of the subject for the learners. For example, a member of one of the major game organisations could talk about their work and any current research projects relevant to game habitat management.

In Outcome 2 the learner will explore a range of ethical and social arguments for and against field sports. A follow on from the investigation described for Outcome 1 could see the learner exploring the history, impact and influence of game management on a local estate. They should then be able to consider all the arguments for and against the continuation of game management.

Outcome 3 requires the learner to understand a range of laws that affect the practice of game management in the UK. Delivery techniques should be varied and should include formal lectures, demonstrations, simulated exercises, observation techniques and evidence gathering or recording.

Outcome 4 requires the learner to understand the role of a range of statutory and non-statutory bodies, and how these various organisations interact. A good way to cover this topic is to give each learner an organisation to study and get them to present their findings to the rest of the group.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.
References

Books


Websites

www.defra.gov.uk The Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.basc.org.uk The British Association for Shooting and Conservation
www.ngo.org.uk National Gamekeepers Association
www.rspb.org.uk The Royal Society for the Protection of Birds
www.countryside-alliance.org.uk The Countryside Alliance
Unit 320 Undertaking Shoot Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of shoot management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will explore the administrative requirements of a shooting enterprise and consider the physical resource requirements. They will plan and manage a shoot day.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Know the administrative requirements of a shooting enterprise
2. Understand the physical resource requirements of a shoot
3. Be able to plan for a shooting season
4. Be able to manage a shoot day.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga21.1 Contribute to the development of an estate’s sporting plan
Ga12 Contribute to the organisation of game shooting activities

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 320  
**Undertaking Shoot Management**

Outcome 1  
Know the administrative requirements of a shooting enterprise

**Assessment Criteria**

The learner can:

1. Outline the major administrative requirements of a selected shooting enterprise
2. Describe marketing for a selected shooting enterprise.

**Range**

Selected shooting enterprise: for example private, commercial, gamebirds, pests

**Unit content**

**Administrative requirements of a selected shooting enterprise**

Setting objectives, planning, implementation, monitoring and records, marketing, finance, staff, physical resources, health and safety, insurance

**Marketing**

Price, product, promotion, place, packaging, people, premises, process
Unit 320  Undertaking Shoot Management
Outcome 2  Understand the physical resource requirements of a shoot

Assessment Criteria
The learner can:
1. Examine the physical resources required for a selected shooting enterprise to meet given objectives.

Unit content

Physical resources
Land (type, location, vegetation, size, topography, habitat), labour (contractors, employees, volunteers), capital (investment, working capital), birds (suitable species, number, age), bird housing and rearing facilities, cover crops (planning, planting and maintaining), bird feed, machinery (for maintenance), equipment, vehicles
Unit 320  Undertaking Shoot Management
Outcome 3  Be able to plan for a shooting season

Assessment Criteria
The learner can:
1. **Plan** the physical resources required for a selected shooting enterprise
2. **Plan shooting** for a given sporting enterprise.
3. Carry out shoot **marketing** for a given sporting enterprise.

Unit content

**Plan**
Setting shoot management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

**Plan shooting**
Number of days, dates, number of guns, guests, fees, number of birds, drives, availability of beaters, dogs, pickers-up

**Marketing**
Price, product, promotion, place, packaging, people, premises, process
Unit 320  Undertaking Shoot Management
Outcome 4  Be able to manage a shoot day

Assessment Criteria
The learner can:
1. **Organise** shooting to meet given objectives.

Unit content

**Organise**
Guns (Collect fee, health and safety briefing, rules and regulations, allocate peg numbers, facilities, timetable for the day), beaters (briefed, organised and directed), pickers-up (briefed, organised and directed), vehicles (transport of guns, beaters, pickers-up), drives, hospitality arrangements, calculating income and expenditure
Unit 320  Undertaking Shoot Management
Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Outcome 1 considers the administrative requirement of a shooting enterprise. Learners must understand how marketing, contractual work, health and safety and other legal requirements, finances and records are key to the successful running of a shooting enterprise. Site visits and case studies could be valuable methods of delivering this outcome. Where possible, learners should be given the opportunity to cover different types of shooting enterprises.

Outcome 2 looks at the physical resource requirements of a shoot. It should cover the complete shooting season and different types of shoot. Where possible, learners should have the opportunity to work with data that they have collected themselves.

Learning outcome 3 covers the planning of a shooting season. As with Outcome 2 delivery should cover the complete shooting season, from the sporting potential of an area to the programme of game release in preparation for individual shoots. Where possible, learners should be given the opportunity to become actively involved in the management of a shoot.

Outcome 4 covers the organisation of a shoot day. Delivery will include all aspects of management, from planning, through running the day, to evaluating it. Delivery will require learners to assist in running (under supervision) a shoot day.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.
References

Books


Websites

www.basc.org.uk The British Association for Shooting and Conservation
www.hse.gov.uk Health and Safety Executive
www.defra.gov.uk Department for Environment, Farming and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
Unit 321  Stalking and Shooting Deer

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of stalking and shooting deer and how these can be applied in practice. This focus is primarily aimed for learners in a centre-based setting looking to progress into the sector or onto further /higher education.

This unit provides the knowledge and skills required to approach wild deer, select animals for culling, carry out a cull and deal with carcasses in an appropriate manner.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the requirements of deer stalking
2. Be able to handle firearms safely and accurately
3. Know how to cull deer and follow up humanely
4. Be able to handle deer carcasses hygienically and keep records

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU49 Stalk and cull deer

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 321  Stalking and Shooting Deer
Outcome 1  Understand the requirements of deer stalking

Assessment Criteria
The learner can:
1. Produce a **plan** for the stalking of wild deer
2. Select **equipment**, including firearm/ammunition for selected deer stalking.

Unit content

Plan
Suitable cull animal, route, wind direction, other land uses, final approach, topography

Equipment
Suitable clothing and survival kit (if appropriate), transport, optical equipment, firearms and ammunition, communication systems, maps, compass, written permission (if required), firearms certificate, food and drink
Unit 321  Stalking and Shooting Deer
Outcome 2  Be able to handle firearms safely and accurately

Assessment Criteria
The learner can:
1. Demonstrate the safe handling and humane use of selected firearms using appropriate shooting positions/distances to meet given objectives
2. Suggest improvements to shooting positions and distances

Unit content

Safe handling
Loading/unloading procedure, muzzle awareness, use of safety catch, safe carrying position, transportation and storage of firearm

Humane
Humane shot placement, bullet behaviour, position of deer, importance of ideal shots

Selected firearms
Must be a legal calibre for deer

Shooting positions/distances
Positions: prone, sitting, kneeling, standing
Distances: within range of effective shot, clear aim, within firearm range
Unit 321  Stalking and Shooting Deer
Outcome 3  Know how to cull deer and follow-up humanely

Assessment Criteria
The learner can:
1. Describe the humane culling of deer
2. Describe follow-up actions for given scenarios

Unit content

Humane culling
Correct shot placement, internal anatomy, bullet behaviour

Follow up action
Location of shot deer, blood trailing, use of dogs, methods of humane despatch (thoracic sticking, short range shooting)
Unit 321  Stalking and Shooting Deer
Outcome 4  Be able to handle deer carcasses hygienically and keep records

Assessment Criteria
The learner can:
1. Carry out carcass **hygiene inspection**
2. **Prepare** deer carcass for food chain
3. Keep relevant **records** of deer culled

Unit content

Hygiene inspection
External and internal inspection, major carcass parts, organs and lymph nodes, notifiable diseases including bovine tuberculosis and foot and mouth disease as well as parasites such as lung worm, liver fluke, ticks, keds, lice and warble fly, storage methods and requirements of carcass

Prepare
Gralloch, remove head and feet, skin, joint

Records
Cull records, meat hygiene inspection, larder weights
Unit 321  Stalking and Shooting Deer
Notes for guidance

For Outcome 1, learners must produce a plan for the stalking of wild deer and select equipment, a firearm and ammunition to meet given objectives. Tutors should identify the objectives or agree them through discussion with the learners. Learners must produce a stalking plan for a specific area, which takes into account the factors indicated in the unit content. They must identify and select the equipment required to carry out a planned outing. This could include suitable clothing and survival kit (if appropriate), transport, optical equipment, firearms and ammunition, communications, maps, compass, written permission (if required), firearms certificate, food and drink. The equipment selected should be relevant to the plan produced.

Outcome 2 requires learners to demonstrate the safe handling and humane use of selected firearms using appropriate shooting positions and distances to meet given objectives. This will require practical assessment, during which learners demonstrate that they can adopt prone, sitting/kneeling and standing shooting positions and achieve a suitable level of accuracy in each. Assessment taking place on a rifle range should be carried out under the protocol developed for the DMQ Deer Stalking Certificate Level 1 shooting test.

Outcome 3 requires learners to describe the humane culling of deer and follow-up actions for given scenarios. Scenarios could include normal heart or lung shots, fatal wounding, e.g. to the liver, or wounding from which recovery is possible, e.g. a broken leg. It is thankfully very rare that the opportunity will arise for the wounding circumstances to be assessed ‘for real,’ but if witnessed evidence is available this could be included. As a minimum, learners should provide evidence covering three culling and follow-up situations. Learners must know the correct shot placement and the reasons for it. The emphasis should be on knowledge of internal anatomy and bullet behaviour such that a humane shot can be taken even if the deer is not in the perfect position in relation to the shooter. Learners should recognise the ideal shots and demonstrate that these are what should be striven for in the majority of cases. The damage caused to the carcass by shooting and the potential for carcass contamination should also be taken into account.

For Outcome 4, learners must carry out carcass hygiene inspection according to current legislation and codes of practice, keeping relevant records to meet given objectives. Outcome 4 could be assessed by a combination of practical and other forms of assessment. Inspection could be assessed by practical demonstration and must include both external and internal inspection. Learners are expected to identify all of the major carcass parts, organs and lymph nodes, and to be aware of their normal appearance. Learners should be aware of notifiable diseases including bovine tuberculosis and Foot and Mouth Disease as well as parasites such as lung worm, liver fluke, ticks, keds, lice and warble fly. Learners must show that they know the correct procedure for isolating suspect parts or carcasses and informing the appropriate organisations. They must also provide evidence of appropriate records for cull records and meat hygiene regulations.
References

Book:


Website:

www.defra.gov.uk The Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.thedeerinitiative.co.uk The Deer Initiative
Unit 322  Use of Firearms in the Environmental and Land-based Sector

Level: 3
Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of using firearms in the land-based sector and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

In the land-based industries, firearms are an essential tool, used for recreational purposes on inanimate targets as well as for culling of species where other methods are not appropriate or legal. Practice on inanimate targets is essential before shooting live targets, ensure that culling is humane and efficient. Recreational target shooting is a rapidly expanding sport and can offer discretion opportunities for landowners. Similarly, game and rough shooting opportunities are increasingly in demand and have become important sources of income. Culling of deer is essential for the maintenance of healthy deer populations that are in balance with their environment, and shooting is the only widely used legal method of culling.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the function of firearms and ammunition
2. Understand the ballistics of projectiles in the safe, efficient and humane use of firearms
3. Understand how to use firearms safely
4. Be able to safely and efficiently use firearms.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga38 Prepare and carry out shotgun training
CU47 Control vertebrate pests and predators by shooting

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 1 Understand the function of firearms and ammunition

Assessment Criteria
The learner can:
1. Examine the functions of firearms and ammunition covering shotguns and rifles.

Range

Firearms
Shotguns: gauges, double barrelled, pump action, semi-automatic, chokes
Rifles: rimfire, centrefire, high velocity, telescopic sights, moderators

Unit content

Functions
Stock, action, barrels, trigger and safety catch, magazine, fitting/sights, shot/bullet, powder, primer, case, wadding

Ammunition
Cartridges: 12 bore, 20 bore, 16 bore
Rifle: .243, .308, .177
Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 2 Understand the ballistics of projectiles in the safe, efficient and humane use of firearms

Assessment Criteria
The learner can:
1. Explain the **ballistics** of selected firearms and the **safety issues** associated with their use
2. Explain the **terminal ballistics** of selected firearms in relation to their humane use on target species.

Unit content

**Ballistics**
Internal/external ballistics, muzzle velocity, trajectory, point of aim, zero point

**Selected firearms**
Shotguns: gauges, double barrelled, pump action, semi-automatic, chokes
Rifles: rimfire, centrefire, high velocity, telescopic sights, moderators

**Safety issues**
Keep broken unless shooting, keep gun pointed downwards, awareness of bystanders, muzzle never on the floor

**Terminal ballistics**
Stopping power, penetration and expansion, tissue damage, hydrostatic shock
Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 3 Understand how to use firearms safely

Assessment Criteria
The learner can:
1. Explain how to handle and store selected firearms safely
2. Explain legal requirements and restrictions on use and possession of firearms.

Unit content

Handle and store safely
In the field, whilst transporting, at home

Legal requirements
Firearms Acts, restrictions on ownership, possession and use, Shotgun and Firearm Certificates
Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 4 Be able to safely and efficiently use firearms

Assessment Criteria
The learner can:
1. Handle firearms safely
2. Safely shoot firearms at selected artificial targets to a given standard.

Unit content

Firearms
Shotguns, rifles

Shoot
Shotgun: maintenance of safe practice throughout; variety of targets broken, crossing, overhead, going away, ‘rabbit’, health and safety, safety protocols, risk assessment
Rifle: maintenance of safe practice throughout, group size, accuracy, target analysis, zeroing adjustment, prone, sitting and standing, variety of target shot, zero, rabbit/fox/deer
Unit 322 Use of Firearms in the Environmental and Land-based Sector

Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

For Outcome 1, learners must identify and describe the functions of given firearms and ammunition. As a minimum, learners should provide evidence covering three different firearms. Evidence for this could be provided by using demo firearms in a safe environment and/or pictorial assessment with notes, or a pictorial presentation with notes (possibly using appropriate software or an overhead projector), an annotated poster, or a project.

Outcome 2 requires learners to explain the ballistics of selected firearms and the safety issues associated with their use. Tutors should identify the firearms, or agree them through discussion with the learners. Learners should appreciate the consequences of firing, in particular the basic theory of obturation and pressure build-up. The effect of rifle bedding, rifle barrel crown damage, barrel blockage and misfire should also be explored. The theory for this outcome could be developed through formal lectures and individual research. There is some excellent software available to demonstrate ballistic theory which would help engage the learner in this subject.

Outcome 3 requires learners to demonstrate safe handling of selected firearms. Tutors should identify the firearms, or agree them through discussion with the learners. As a minimum, learners should provide evidence covering three different firearms. Particular reference should be made to awareness of the loaded and unloaded condition of firearms, muzzle awareness and use of the safety catch. Learners need to also explain restrictions on possession and use of each firearm. As this is a practical outcome as much delivery as possible should be dedicated to the practical handling of firearms.

Outcome 4 requires learners to safely shoot firearms at selected artificial targets to a given standard. Tutors should identify the targets and standards. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. The majority of the delivery of this unit will be spent on a clay range/rifle range developing the learner's confidence on a variety of targets using both shotguns and rifles.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.
References

Books


Websites

www.basc.org.uk The British Association for Shooting and Conservation
www.hse.org.uk Health and Safety Executive
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
Unit 323  Understand Working Dogs

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of training working dogs and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Health, welfare and basic field first aid of the working dog are essential parts of this unit. Correct housing requirements for a variety of breeds must be considered.

Learning outcomes

There are four learning outcomes to this unit. The learner will:

1. Be able to identify the most common breeds and types of working dogs and their suitability for countryside management tasks
2. Know how to plan a structured training programme for a working dog
3. Understand the health and first aid issues that can affect working dogs
4. Understand the housing requirements for a specific breed of working dog.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga10 Care for animals used in support of gamekeeping and wildlife management
CU39.1 Plan the accommodation of animals
CU40 Train animals to achieve specific objectives
CU41 Handle and care for animals to enable them to work effectively

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.
Unit 323  

Understand Working Dogs

Outcome 1  
Be able to identify the most common breeds and types of working dogs and their suitability for countryside management tasks

Assessment Criteria
The learner can:
1. Identify given breeds of working dog
2. Describe the tasks that each breed of dog is designed for

Unit content

Breeds
Retrievers (Labrador, Golden), Spaniels (Springer, Cocker, Field), HPR breeds, pointers, setters, terriers, cross breeds

Tasks
Retrieving, hunting, flushing, pointing, vermin control, tracking

Match the breed with the tasks that the breed is designed for, for example, Spaniels are versatile (hunting, flushing, retrieving)
Unit 323  Understand Working Dogs
Outcome 2  Know how to plan a structured training programme for a working dog

Assessment Criteria
The learner can:
1. Develop a structured training programme for a selected breed of dog

Unit content

Structured training programme
Training techniques: response reinforcement, rewards and punishment, commands, canine psychology
Underlying training principles: consistency, non-predictability, insistence
Basic obedience: Recall, sit, stay, whistle (recall and stop whistle), hand signal to sit, walking to heel
Retrieving a dummy: retrieving a visually marked dummy on command, steadiness, directional control, importance of variation in training activities, intermittent reinforcement
Hunting: following a scent, questing ahead, drop to flush, drop to shot
Entering and crossing water, jumping obstacles
Working on dead and live game
Programme: timing, sequence, review and evaluation, modifications
Unit 323  Understand Working Dogs
Outcome 3  Understand the health and first aid issues that can affect working dogs

Assessment Criteria
The learner can:
1. Compile and explain a health check record sheet suitable for a selected working dog
2. Describe basic first aid for working dogs

Unit content

Health check
Checks should include: visual assessment of condition, behaviour (including feeding and drinking), movement and posture, condition of eyes, ears and nose, coat condition, paws and claws.
Check temperature, pulse and respiration.

Basic first aid
Working dogs are particularly susceptible to:
Cuts, lacerations and abrasions (cut pads, wire cuts), exhaustion, hypothermia, hyperthermia, collapse, shock due to injury, fractures, sprains and strains, eye, ear and tail injuries, grass seeds in eyes, ears and paws, ticks
The first aid kit, what to do if on a shoot, when to call the vet
Unit 323 Understand Working Dogs
Outcome 4 Understand the housing requirements for a specific breed of working dog

Assessment Criteria
The learner can:
1. Design a new kennel facility for a specified breed of working dog

Unit content

Kennel facility
Site of kennel facility, number of dogs to be housed, layout, dimensions, construction material (wood, metal), sleeping areas (ventilation, light, heating), bedding, run, provision of food and water, fixtures and fitting, safety and security, whelping facilities, litter rearing facilities
Cleaning requirements (full and spot clean), cleaning methods, disinfection
Welfare: five animal needs/freedoms
**Unit 323  Understand Working Dogs**

Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

For Outcome 1, learners must identify given breeds of working dog and describe their best suited tasks. As a minimum, learners should provide evidence including four different breeds of working dog to cover four different roles within countryside management, as indicated in the unit content. A visit to a gundog trainer that keeps a range of breeds will provide a valuable insight into the capabilities of each. Similarly visiting field trials and working tests will allow the learner see a variety of breeds in the field.

For Outcome 2, learners must develop a structured training programme for a selected breed of dog working in a given area of countryside management. Tutors should identify the breed of dog and area, or agree them through discussion with the learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. The input of a professional dog trainer with a range of dogs at different stages of training will be very valuable for this outcome so that the learners can gain an insight into how dogs develop and how their training needs change to reflect this.

For Outcome 3, learners must compile and explain a health check record sheet suitable for a selected working dog, describing basic first aid applications. The choice of dog could be negotiated between the tutor and the learners. The input of a Vet or veterinary nurse who has experience of a range of injuries/ailments of dogs would be very useful for this outcome.

For Outcome 4, learners are required to investigate the requirements for housing a specified breed of working dog. Tutors should identify the objectives. Visiting a range of kennel buildings should provide learners with ideas for this outcome.

Learners must consider the materials and equipment to be used in the construction process. The design must include a whelping area and litter rearing requirements, with welfare issues prominently at the forefront of the design. Specifications of utilities, drainage, water supply, electricity and waste disposal need to be considered, along with any planning authority requirements.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.
References

Books

Unit 324  Business Management in the Land-based Sector

Level: 3

Credit value: 10

Unit aim

The learner will look at the business, the role and responsibilities of those employed in land-based businesses and resource requirements. They will develop their skills in business operations and produce a business plan.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Know the breadth and importance of an industry in the environmental and land-based sector
2. Understand business resources and structures
3. Understand the business marketplace
4. Understand how to use financial and physical record keeping systems

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
n/a

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge
Unit 324  Business Management in the Land-based Sector

Outcome 1  Know the breadth and importance of an industry in the environmental and land-based sector

Assessment Criteria
The learner can:
1. Describe the importance of businesses within the industry to the economy
2. Outline the range of associated businesses allied to the industry

Unit content

Importance to the economy
Using measures available to the industry, e.g. value of output, contribution to Gross Domestic Product (GDP), employment, land use, economic and social benefits, trends in importance
Range of organisations: typical types of businesses and other organisations (e.g. representative, regulatory, not-for-profit) within the sector, regional variations, changes and developments in the last 50 years

Associated businesses
Relevant industries in primary, secondary and tertiary industrial sectors (e.g. suppliers of raw materials, processors, distributors, retailers, service providers)
Associated organisations: specific interrelationships between one business and other associated organisations e.g. suppliers of goods and services, representative organisations and professional bodies, regulatory bodies, competitors, customers, aims and roles of important organisations in the sector
Unit 324  Business Management in the Land-based Sector
Outcome 2  Understand business resources and structures

Assessment Criteria
The learner can:
1. Explain the legal structure and organisation of a land-based business
2. Explain the physical resource requirements of a selected land-based business
3. Describe different job roles and responsibilities in a selected land-based business

Unit content

Legal structure and organisation
Features of the main business types, e.g. sole trader, partnership, limited company, not-for-profit organization, charity, public sector organisations, organization staffing structure

Physical resource requirements
Property (forms of tenure, appraisal of business potential), vehicles and machinery, tools and equipment, stocks (stock control procedures), insurance of physical resources

Job roles and responsibilities
Job roles relevant to the sector, e.g. director, manager, supervisor, team worker, trainee, administrator, volunteer, sub contractor, job title, job description, responsibilities for financial, physical and human resources, staff motivation and performance management, person specification (typical skills, qualifications and experience required to fulfil the role), legal rights and responsibilities in work (e.g. pay, working hours, holidays, equal opportunities, health and safety, employment protection), relevant employment legislation
Unit 324  Business Management in the Land-based Sector
Outcome 3  Understand the business marketplace

Assessment Criteria
The learner can:
1. Describe the **marketplace, customers and competitors** for a land-based business
2. Explain features of an efficient **supply chain** in a land-based context
3. Review **quality management** systems and practices within a land-based business

Unit content

**Marketplace, customers and competitors**
Size of market (e.g. value of sales, number of customers), external influences on the market (political, economic, socio-cultural, technological), customer base (number, type, characteristics, market segments), direct and indirect competitors, competitor analysis, market share

**Supply chain**
Suppliers, distributors, customers, choosing suppliers, ensuring supplies of inputs, supply chain assurance (e.g. environmental, animal welfare)

**Quality management**
Important aspects of quality in the sector, formal quality standards or approval (e.g. Farm Assured, ISO 9000, BHS approval), informal systems and practices to achieve quality, problems arising if quality is not achieved
Unit 324  Business Management in the Land-based Sector
Outcome 4  Understand how to use financial and physical record keeping systems

Assessment Criteria
The learner can:
1. Review financial records for a selected land-based business
2. Examine physical records for a selected land-based business
3. Examine the use of financial and physical records in monitoring business performance and progress

Unit content

Financial records
Importance of keeping accurate records (legal requirements and management efficiency), purchasing and ordering procedures, order forms and orders, deliveries and receipts, invoices and sales records, credit control, payment methods, bookkeeping (cash analysis, petty cash, cash flow, budgets, computer accounts programmes), basic accounts (trading account, balance sheet, depreciation), taxation (VAT, income tax PAYE, national insurance contributions, corporation tax), wage calculation

Physical records
Records appropriate to the industry relating to e.g. production, inputs, staffing, customers, resource use, data protection, legal requirements to keep records, e.g. pesticide use, veterinary medicines, transport, animal movement, passports

Monitor business performance and progress
Use of financial and physical records to monitor business performance, e.g. production levels, costs of production, financial efficiency, monitoring against targets, budgets, previous periods, relevant review periods (e.g. weekly, monthly, annually), appropriate remedial actions, staff roles in recording and analysing information
Unit 324  Business Management in the Land-based Sector
Notes for guidance

This unit is designed to provide the learner with an understanding of the business aspects of their industry. It is applicable to all sectors of the environment and land-based sector and learners focus their study on the sector most relevant to their vocational interests.

In Outcome 1 they will investigate the size, scope and importance of their specialist sector within the environment and land-based industries, and how this has developed over the last 50 years or so. For some sectors this type of information is more readily available than other (e.g. agriculture), so learners should be supported in accessing whatever information is available relevant to their sector. They will also investigate the range of business types and other organisations that are represented in their sector, including important regulatory, professional or representative organisations. Wherever possible this should be related to specific businesses and organisations. This outcome is likely to require formal teaching, which should be supported by relevant information on businesses and organisations within the sector, and could include speakers representing these. Independent study and investigation should also be encouraged.

Outcome 2 focuses on the legal and resource implications of constituting a business. They will learn about the range of business organisations in the private and public sectors, and the legal and practical implications of different business types. This should be related to the types of business important in their sector. Learners will investigate the physical resource requirements of businesses, and how they are managed. It would be appropriate for learners to undertake a case study on a business premises in their sector and appraise its strengths and weaknesses for a given business use. The understanding that learners will gain on job roles and responsibilities has links with the requirements for Work Experience, and employers could be invited to explain their expectations in the workplace. The learners’ investigations should focus on job roles within their specialist sector.

In Outcome 3 learners will analyse the market for a specific land-based business. This could involve a case study project and should identify, for that business, information on the content listed. External influences should be relevant and current to that business. Specific competitors should be identified and analysed to identify strengths and weaknesses to the case study business. When investigating the supply chain learners will need to identify the flow of resources from production of raw materials, through relevant manufacture and processing, to end consumers. Quality management will include reference to any formal standards or approvals that are relevant. It should also consider the quality standards required by the industry, any systems and practices that are used to achieve quality, and implications of failing to meet prescribed or assumed levels of quality. This should be related to specific businesses and teaching could again be supported by relevant visiting speakers from industry.

Outcome 4 focuses on the range of financial and physical records that are required to meet legal requirements as well as to ensure effective business operation. Learners will need to be able to complete simple examples of the range of financial records listed. They should be aware of paper-based and computerised systems for financial records but are not expected to become competent in the use of IT accounts software. The range of physical records investigated should be related to the needs of the learners’ specialist sector, and should include important current examples of legally required records. This content could link with other specialist vocational units. In addition to completing a range of records, learners will investigate how specific examples can be used to aid decision making, monitor and control business performance.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.
It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are linked directly with interactive lessons in a real environment.

References

Books

Unit 325  
Undertaking Land-based Machinery Operations

Level: 3
Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of land-based machinery operations and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learners will study the purpose and operation of land-based machines including machine layout, systems and controls. They will explore daily checks and adjustments as well as appropriate Personal Protective Equipment and the legal and recommended requirements for land-based machinery. They will learn how to safely operate and maintain machinery and consider the different conditions in which machinery might need to operate.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the purpose and operation of land-based machines
2. Be able to prepare land-based machines ready for work
3. Be able to safely operate land-based machinery
4. Be able to carry out operator maintenance and simple repairs

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU28 Prepare for and maintain equipment and machines

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge
Unit 325  Undertaking Land-based Machinery Operations

Outcome 1  Understand the purpose and operation of land-based machines

Assessment Criteria
The learner can:
1. Explain the purpose and safe operation of selected land-based machines
2. Discuss the differences between selected land-based machines

Range

A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

Safe operation

Differences between Land-based machines
Trailed or mounted, powered or non powered, mechanical, electric or hydraulic powered, wheels, skids or hydraulic pressure accumulation, cutting, gathering, conveying; belts, chains, shaft drives; vacuum, pressure, gravity; swath width, bout width, row width, depth control
Unit 325  Undertaking Land-based Machinery Operations
Outcome 2  Be able to prepare land-based machines ready for work

Assessment Criteria
The learner can:
1. Prepare selected land-based machinery ready for work safely
2. Review the pre-start checks and safety requirements for selected land-based machinery

Range
A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

Prepare selected land-based machines
Power unit suitability, removal from storage, cleaning, damage inspection, correct hitching, free movement of working components/controls, connection to power unit, wheel and tyre maintenance, braking and lighting requirements, lubrication, calibration, tying/wrapping materials, initial field settings

Pre-start checks
Power drive shaft condition, decontaminated, safety overload devices, fuel/oil requirements, tyre pressures and conditions, lighting controls including brakes, belt tensions

Safety requirements
Guards, safety rails, steps, safe attachment to power unit, component security, information decals
Unit 325 Undertaking Land-based Machinery Operations
Outcome 3 Be able to safely operate land-based machinery

Assessment Criteria
The learner can:
1. **Operate** selected land-based machinery to meet given objectives safely
2. Explain the **safe operation** of selected land-based machinery

Range
A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

**Operate**
Site risk assessments, PPE, operator instruction manual, data sheets, transport/field settings, calibration check, correct power engagement, correct machine speeds, safe/correct loading of materials, machine output checks/quality of work, field procedures, terrain, ground conditions/undulations, public access

**Safe operation**
Health and Safety at Work etc Act (1974), follow manufacturers’ recommendations, dealer installation process, operator instruction manuals, manufacturer web sites
Unit 325  Undertaking Land-based Machinery Operations

Outcome 4  Be able to carry out operator maintenance and simple repairs

Assessment Criteria
The learner can:
1. Carry out operator maintenance and appropriate repairs for selected land-based machinery
2. Assess potential faults and/or defective parts on a given land-based machine

Range
A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

Operator maintenance
Manufacturers’ service schedules/instructions, lubrication, cleaning, assessment of wear tolerances, component replacement disposal of waste

Repairs
Framework welds, joints, distortion, fractures, leaking pipes, connections

Potential faults
Uneven groundwork, crop damage, inaccurate outputs, incorrect linkage settings, incorrect drawbar settings, uneven tyre pressures, incorrect track widths, power unit unsuitable, blockages

Defective parts
Belts, chains, bearings, loose splines, shares/tines, blunt/missing knives, rotor balance, nozzles/filters, and seals
Unit 325  Undertaking Land-based Machinery Operations

Notes for guidance

This unit is designed to give learners knowledge, understanding and practical skills to enable them to recognise and understand the working principles of land-based machines typically used in their area of study.

Learners will be able to demonstrate pre start checks, initial settings and safe start up techniques for a range of selected machines prior to connecting the machine to a suitable power unit and preparing machine and power unit for work. An emphasis will be put on the correct use of manufacturers’ recommended procedures and respect for health and safety issues and conformation of relevant safe working practices.

It is envisaged that all learners, prior to studying this unit will have received training in the use of tractors and have been assessed as having reached a level of competence to allow practical tasks to be demonstrated safely. Learners must show awareness and consideration of hazards and risks at all times, particularly during fieldwork situations where levels of risk may vary at any given time.

Where possible, non-simulated field work should be programmed into the learning period to take into account seasonal opportunities. Following field operations, learners will demonstrate simple maintenance and pre storage tasks to minimise degeneration of the machine and to ensure the machine is in a useable condition for subsequent operations. The range of machinery covered should include electric vehicles and machines if appropriate.

In Outcome 1, learners must demonstrate knowledge and understandings of the construction and working principles of a selection of Land-based machines commonly used in their area of study and demonstrate knowledge of the work and performance parameters of such machines.

In Outcome 2, learners will demonstrate an ability to prepare the machine for field operations and ensure that the machine is matched and correctly connected to a suitable power unit. Machines are to be selected from the ‘range/scope’ list outlined in the unit content. It is essential that manufacturers’ recommendations be followed to enable machines to be initially set to achieve given fieldwork criteria.

In Outcome 3, learners will need to explain safe operational procedures and carry out risk assessment prior to engaging in fieldwork. Suitable field procedures are to be demonstrated, regular checks to be made on machine performance and necessary adjustments made to both machine and power unit to meet given fieldwork criteria economically and efficiently.

In Outcome 4, following fieldwork operations, learners must carry out pre-storage maintenance, carry out an inspection to identify and subsequently rectify any faults. Wearing components will need to be assessed and replaced if wear limits are reached. Throughout the unit the emphasis will be on safe, legal practices, working to manufacturers’ recommended procedures and attention to detail when recording information.

Depending on the Land-based area the learner is studying, formal lecture delivery may be generic to all areas but practical experiences and learning should be appropriate to the area of study.
References

Books


Journals

Farmers Weekly
Amenity Machinery and Equipment
Profi International

Websites

www.hse.gov.uk Health and Safety Executive
Manufacturer's websites
Unit 326  Understand the Principles of Plant Science

Level: 3

Credit value: 5

Unit aim

This unit aims to provide learners with an understanding of the principles of plant science and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will have developed an understanding of how plants grow and develop, through knowledge of their structure and physiology.

Learning outcomes

There are three learning outcomes to this unit. The learner will:

1. Understand the function of plant structures
2. Understand the main processes of plant physiology
3. Understand plant growth and development

Guided learning hours

It is recommended that 30 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

N/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.
Unit 326  Understand the Principles of Plant Science
Outcome 1  Understand the function of plant structures

Assessment Criteria
The learner can:
1. Identify the major internal and external structures of plants
2. Explain the function of the major plant structures

Unit content

Major internal structures
Cell structure (cytoplasm, organelles), parenchyma, collenchyma, sclerenchyma, xylem tissue, phloem tissue, cambium, epidermis, guard cells, and stomata

Major external structures
Root, shoots, stem, leaves, buds, flower, fruit, and seed
Specialised internal and external structures, for example pericycle, endodermis, lenticels, cotyledons, stolons, rhizomes, storage organs

Function
Photosynthesis, reproduction, support, transport, anchorage, absorption, storage, defence, attraction, aeration, respiration, division
Unit 326  Understand the Principles of Plant Science
Outcome 2  Understand the main processes of plant physiology

Assessment Criteria
The learner can:
1. Explain the major processes of plant physiology
2. Identify the factors which can limit the rate of photosynthesis

Unit content

Processes
Photosynthesis: process (equation) for photosynthesis, function of chlorophyll, functionality of guard cells and stomata, factors needed for photosynthesis to occur (light, chlorophyll, carbon dioxide, water)

Respiration: definition of aerobic and anaerobic respiration, equation for aerobic respiration, structure and function of mitochondria, diffusion, compensation point, factors influencing the rate of respiration (temperature, water availability, seasonal growth)

Uptake, transport and loss of water and nutrients: osmosis, diffusion, plasmolysis, turgor, translocation, transpiration, factors influencing transpiration (temperature, humidity, air movement, water supply, light, stomata)

Limiting factors of photosynthesis
Temperature, carbon dioxide, leaf colour, light, water availability
Unit 326  
Understand the Principles of Plant Science

Outcome 3  
Understand plant growth and development

Assessment Criteria
The learner can:
1. Explain the life cycle of selected plants

Unit content

Life cycle
Life cycle types (ephemeral, annual, biennial, perennial), process and stages of germination, types of germination (epigeal, hypogeal), types of reproduction (sexual reproduction, for example flower structures, pollination and fertilisation, seed production, dispersal), (asexual reproduction, for example vegetative propagation, parthenogenesis), primary growth of shoots and roots (cell division, cell expansion, cell differentiation, apical meristems, lateral meristems)
Unit 326  
Understand the Principles of Plant Science

Notes for guidance

On completion of this unit, the learner will have developed an understanding of how plants grow and develop, through knowledge of their structure and physiology. It will be important that delivery relates to plants that are vocationally relevant to the learners- e.g. production crops for agriculture. Laboratory based practicals could help learners to explore plant physiology and structure, and a series of visits to growing crops could help learners better understand plant growth and development. Learners are required to study a range of monocotyledon and dicotyledon plants for this unit.

Outcome 1 requires the learner to identify the main internal and external structures of both monocotyledon and dicotyledon types of plants and to explain the function of the main plant structures. The outcome is mainly theory based and can be delivered by formal lectures, discussion, internet research and directed study.

Outcome 1 and 2 are directly linked as outcome 2 identifies the need for learners to explain the major processes of plant physiology and identify factors affecting photosynthesis. Learners may find it useful to undertake practical sessions, habitat surveys or site visits to a range of habitats to learn more about plant physiology and factors affecting photosynthesis.

Outcome 3 requires the learner to explain the life cycle of plants which again can be linked into outcome 1 and 2 with careful planning. Learners should visit sites where plants can be studied at appropriate development stages i.e. at different times of the year. Formal lectures, directed study and research will be required to enhance the learners understanding of the complexities of plant physiology and life cycles. It is important that a risk assessment is carried out prior to any practical activity and that suitable Personal Protective Equipment (PPE) is provided.

Visiting speakers e.g. agronomist, rangers or plant breeders could enhance relevance of the subject to learners. Work experience may be beneficial to learners looking to develop careers in the field. Development of areas within a College environment where learners are able to modify and manipulate plant environments may enhance understanding of the complexities of plants and their life cycles.
References

Books

Unit 327  Understand the Principles of Soil Science

Level: 3

Credit value: 5

Unit aim
This unit aims to provide learners with an understanding of the principles of soil science. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

This unit aims to develop the learners understanding of soil characteristics, and their relationship to crop growth and development.

Learning outcomes
There are three learning outcomes to this unit. The learner will:
1. Be able to investigate soil characteristics
2. Understand how soil characteristics affect plant growth and development
3. Understand how soil characteristics affect plant selection

Guided learning hours
It is recommended that 30 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
n/a

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge
Unit 327  Understand the Principles of Soil Science
Outcome 1  Be able to investigate soil characteristics

Assessment Criteria
The learner can:
1. Compare the characteristics of different soil types
2. Carry out experiments to determine the characteristics of a soil sample

Range

Soil types
Loams, clays, silts, sands, organic soils

Unit content

Characteristics
Properties of soil particles (clay, silt, sand), water holding capacity, aeration, stability, organic matter, pH, soil structure (crumb structure, aggregate sizes)

Experiments
Laboratory based tests (water holding capacity, soil pH, proportion of clay, silt and sand, nutrient content)
Unit 327  Understand the Principles of Soil Science
Outcome 2  Understand how soil characteristics affect plant growth and development

Assessment Criteria
The learner can:
1. Explain how soil type and condition affect plant growth and development
2. Explain how soil structure and drainage can affect plant growth and development.

Range

Soil types
Loams, clays, silts, sands, organic soils

Unit content

Soil condition
Stability, availability of macronutrients (nitrogen, phosphorous, potassium), micronutrients (for example iron, copper, manganese), nutrient retention, water retention and availability, effects of organic and inorganic fertiliser application, pH and organic matter

Effects of soil structure and drainage on plant growth and development
Rooting depth, availability of plant nutrients, drainage, water logging, compaction, effects of high soil water content (reduced oxygen availability, poor plant growth), effects of water availability to plants, effects on ability to cultivate
Unit 327  Understand the Principles of Soil Science
Outcome 3  Understand how soil characteristics affect plant selection

Assessment Criteria
The learner can:
1. Explain how cultural techniques affect soil characteristics

Range

Soil types
Loams, clays, silts, sands, organic soils

Unit content

Cultural techniques
Crop/plant rotations and crop/plant choice, nitrogen fixation
Cultivations: ploughing, minimal cultivation techniques, zero cultivation, subsoiling
Establishment: broadcasting, transplanting, precision seeding, direct drilling, use of green manures and muck inclusion
Crop maintenance: spraying and fertiliser application, damage by machine and its reduction
Harvesting and seasonality: harvesting damage

Soil characteristics
Proportions of sand, silt, clay, organic matter content, water holding capacity, air, permeability, pH, porosity
Plant life and earth worm populations
Compaction capping and smearing
This unit aims to provide learners with an understanding of the interrelationship between soil characteristics and crop growth and development, and explores soil characteristics through investigative experiments. As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity.

Delivery of this unit will involve classroom based activity, laboratory experiments and visits to sites with different soil characteristics, preferably also with a range of crop types. It is likely that learners will also need to undertake independent study and research.

In Outcome 1, learners will need to investigate a range of soil types and carry out supervised basic soil experiments to identify different soil characteristics. These could include investigating the proportion of sand, silt and clay through suspending in water, investigating the water holding capacity of different soil types, and determining soil pH.

For Outcome 2, learners will need to develop an understanding of the effects of soil characteristics on crop growth and development. This could be supported by some controlled experiments, where learners grow plants in different soil types. Delivery of this outcome could also be enhanced by visits to see different types of crops growing in different soil types. Visiting expert speakers, such as soil scientists or agronomists, could be useful, and could describe practical aspects of managing soil structure and plant nutrition.

Outcome 3 covers the effect that choice of crop has on soil characteristics, which is the basis of crop rotation principles. Delivery will include consideration of the range of consequential effects of crop choice i.e. methods of planting and harvesting, use of machinery, crop requirement for supplementary nutrients. Delivery is likely to include both classroom activity and site visits, and could be linked to learners’ work placements. A guest speaker, particularly one able to discuss the relative merits of crop rotation, would add further vocational interest.
References

Books


Journals

Arable Farming
Crops
Farmers Guardian
Farmers Weekly
Landwards

Websites

www.bbsrc.ac.uk Biotechnology and Biological Sciences Research Council
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.hse.gov.uk Health and Safety Executive
www.lantra.co.uk Lantra SSC
www.pda.org.uk Potash Development Association
www.rothamsted.ac.uk Rothamsted Research
www-saps.plantsci.cam.ac.uk The Science and Plants for Schools Website
www.soils.org.uk British Society of Soil Science
Unit 328  Understand the Principles of Tree Felling and Chainsaw Use

Level: 3  
Credit value: 10  

Unit aim

This unit aims to provide learners with an understanding of the principles of chainsaw maintenance, felling small trees (200-300mm at felling height) and stump removal and how these can be applied in practice. This unit is aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will identify and understand a range of petrol-driven chainsaws and felling techniques currently used within the industry, to develop efficient chainsaw maintenance skills and to carry out basic repairs and troubleshooting.

This unit will not directly lead to certification of competence in the Level 2 Award in Chainsaw and Related Operations. This unit could be used to contribute towards preparative training for the Level 2 Award in Chainsaw and Related Operations or the Level 3 Certificate of Competence in the Thorough Examination of Arboricultural Equipment.

If learners want to achieve the Level 2 Award in Chainsaw and Related Operations they will need to register and take the assessment separately through City & Guilds.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Be able to correctly maintain chainsaws to manufacturer’s recommendations
2. Be able to safely fell and cross cut small diameter trees
3. Be able to safely use stump and brushchipping removal methods
4. Understand commonly used stump and brushchipping removal and tree felling methods

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

TW10 Fell small trees using a chainsaw
TW12 Cross cut small diameter timber using a chainsaw
TW14 Stack crosscut timber manually
TW41Survey and inspect trees
TW42 Soil amelioration for tree health
TW43 Undertake emergency arboricultural operations

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.
Assessment and grading
This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.
Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Outcome 1 Be able to correctly maintain chainsaws to manufacturer’s recommendations

Assessment Criteria
The learner can:
1. Safely carry out maintenance operations on selected chainsaws in accordance with manufacturer’s recommendations and health and safety guidelines
2. Identify common faults in chainsaws

Range

Maximum guide bar length of 380mm (15”)

Unit content

Maintenance operations
Visual inspection
Operations to include: removal and cleaning of air filter, removal and checking of spark plug removal, checking and maintenance of bar and chain, sharpening of chain, checking of anti-vibration mounts, oil and fuel check

Common faults
To include: uneven sharpening (left/right hand), incorrect depth gauges, bent bar, blocked air filter, on/off switch, poor or incorrect fuel mix, lack of chainsaw oil, worn bar, worn chain, worn anti vibration mounts, slack chain, dirty chainsaw
Unit 328  Understand the Principles of Tree Felling and Chainsaw Use

Outcome 2  Be able to safely fell and cross cut small diameter trees

Assessment Criteria
The learner can:
1. **Assess risks** prior to felling and cross cutting operations
2. **Safely fell and cross cut** selected small diameter trees to meet given objectives
3. **Dispose of waste** appropriately

Range

Tree up to 380mm in diameter at felling height

Unit content

**Assess risks**
Risks to include: ground conditions, undergrowth, escape routes, weather conditions, overhead power lines, loose or dangerous limbs overhead, local dangerous trees including leaning trees, windblown, dead and rotten, wires, fencing, metal in tree at cutting level

**Safely fell and cross cut**
Safely factors to include: risk assessment carried out, escape routes established, felling only if safe to do so, direction of fell
Fell: correct use of chainsaw, choice and positioning of cuts, depth of hinge, body positioning/stance
Cross cut: to meet requirements, avoiding hitting ground with bar and chain, work technique, avoidance of ‘pinching’ of bar

**Dispose of waste**
Meeting requirements of site, cutting to suitable size if required, stacking as required, possible burning or removal, provision of saleable product
Unit 328  Understand the Principles of Tree Felling and Chainsaw Use

Outcome 3  Be able to safely use stump and brushchipping removal methods

Assessment Criteria
The learner can:
1. Select **appropriate stump and brushchipping removal methods and equipment**
2. **Safely use** appropriate stump and brushchipping removal methods
3. Identify **environmental impacts** of removal methods used

Unit content

**Appropriate stump and brushchipping removal methods and equipment**
Guarding, Personal Protective Equipment, manual handling techniques, mechanical aids, stabilisers, safety trip bar

**Safely use**
Signage and barriers as appropriate, Personal Protective Equipment to include both eye and ear protection, adherence to codes of practice, use in accordance with manufacturer’s instructions
Reinstatement of soil and ground post extraction

**Environmental impact**
To include: noise, waste product, dust, chippings, exhaust gas pollution, possible hydraulic oil pollution, visual damage, damage to ground and soil
Unit 328  Understand the Principles of Tree Felling and Chainsaw Use

Outcome 4  Understand commonly used stump and brushchipping removal and tree felling methods

**Assessment Criteria**
The learner can:
1. **Evaluate** commonly used stump and brushchipping removal methods
2. **Assess different** problem trees
3. **Evaluate** methods for felling problem trees
4. **Explain the uses** of chainsaws
5. **Assess tree felling activities** carried out
6. **Explain the maintenance** of chainsaws

**Range**
Small trees up to 380mm in diameter at felling height

**Unit content**

**Evaluate**
Factors include: availability, cost (purchase and hire), access, waste, customer requirements, tree species

**Problem trees**
To include: leaning trees, trees with damage, trees with rot, dead trees, trees in difficult location, trees close to other objects, leaning trees, hung-up trees

**Methods for felling problem trees**
To include: dismantling, use of platforms, specialist cutting techniques

**Uses**
Felling, cross cutting, delimbing, snedding, logging, surgery

**Assess tree felling activities**
Suitability for purpose, end product, disposal of waste, finished state of site, cost, labour involved, environmental impact, disturbance to public, risk involved

**Maintenance**
Cleaning, sharpening, air filter, bar, spark plug, fuel and oils, checking of anti-vibration mounts
Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Notes for guidance

This unit is designed to provide the learner with a sound knowledge of chainsaws and their use and the skills required to use a chainsaw to fell and cross cut small trees. It also enables them to remove stumps and to identify and evaluate, but not deal with, problem trees.

Throughout the unit, the emphasis should be on safe working. It is expected that the learner will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working. It is a requirement for the learner to operate machinery, therefore health and safety issues relevant to the equipment and tasks involved must be stressed and regularly reinforced. Adequate Personal Protective Equipment (PPE), appropriate to the learner, the equipment and the task must be provided and worn in accordance with the associated risk assessment, industry and operator’s manual.

Outcome 1 enables the learner to both carry out routine maintenance tasks on a chainsaw and to recognise common chainsaw faults. The faults may be engine related, assembly related or evident by chainsaw use and identified by cutting problems. It is important here that safe working practices are adhered to and correct PPE worn for working on the chainsaw. This outcome is best initially delivered in a workshop context with eventual move to a working woodland environment. Emphasis should also be put on the need for cleanliness throughout. The requirement for regular maintenance and sharpening and use of the manufacturer’s manuals should also be identified.

This unit will not directly lead to certification of competence in the Level 2 Award in Chainsaw and Related Operations. This unit could be used to contribute towards preparative training for the Level 2 Award in Chainsaw and Related Operations or the Level 3 Certificate of Competence in the Thorough Examination of Arboricultural Equipment.

If learners want to achieve the Level 2 Award in Chainsaw and Related Operations they will need to register and take the assessment separately through City & Guilds.

In Outcome 2 the learner is required to assess a site and if safe to do so fell small diameter trees, cross cut them and dispose of waste. It is recommended that simple trees are used initially and as the learner gains confidence and experience then the working area can be more real. It is advised that simulation of a real working environment is used in the first instance. Pre-start checks and safe starting techniques must form part of this outcome.

In Outcome 3 the learner is required to understand the methods and equipment available for stump removal and to select and use an appropriate method for a given situation. Particular attention must be made to safe working practice and the need for PPE. Possible danger to the public and fellow workers needs to be emphasised. Where winching is carried out, the learner needs to be aware of how to check and maintain cables and the particular danger of their use.

In Outcome 4 the learner is required to assess a number of factors involved with tree felling and chainsaw use (these include problem trees). The learner will learn to identify problem trees but will not work on them. The learner will be made aware of methods of dealing with problem trees. This can all be taught in a real working environment. It is essential that risk assessments are carried out and the learner is not put at risk when examining problem trees. It is possible that some of this may initially be taught in the classroom using slides or PowerPoint presentations. The uses and maintenance of chainsaws will also be understood.

Finally the learner will gain the knowledge required to be able to assess an operation involving felling that has been carried out.

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Centres are encouraged to introduce employers and specific professionals from the forestry or arboricultural industry, such as dealers or chainsaw operators to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of working sites to add depth to the learners experience by offering a range of trees and scenarios.

It is accepted that some formal lectures will be necessary. However, it is recommended that these are linked to considerable interactive practical lessons in a real working environment.

References

Books

Journals
Arboricultural Association Newsletter
Forestry and British Timber

Leaflets
FASTCO chainsaw leaflets
Unit 329  Understanding Woodland Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of woodland management and how these can be applied in practice. It is designed for learners in a centre-based settings looking to progress into the sector or further education and training.

This unit aims to provide learners with sufficient skills to create their own woodland management plans and to evaluate the existing management of woodlands for multipurpose objectives.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Be able to obtain woodland data and information
2. Be able to produce woodland management plans
3. Understand woodland management objectives
4. Understand woodland management planning

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC24 Produce site management plans

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed Lantra SSC.

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 329  Understanding Woodland Management
Outcome 1  Be able to obtain woodland data and information

Assessment Criteria
The learner can:
1. Collect and record data and information relevant to woodland
2. Interpret data and information collected

Unit content

Collect and record data
Physical data (roads, rides, public rights of way, surrounding land use, topography, orientation, boundary, drainage, watercourses, ponds, structures), biological data (species present, canopy structure, animals, pests, diseases), tree data (diameter at breast height (DBH), stocking density, species mix, height, basal area, volume, form, canopy height, potential value), meteorological data (temperature extremes, wind speed, wind direction, sunlight hours, rainfall), soil data (type, texture, structure, pH)

Interpret data
Collected and recorded data, Ordnance Survey maps, soils maps, site surveys, inventories, Met Office data, public records, historical records
Unit 329  Understanding Woodland Management

Outcome 2  Be able to produce woodland management plans

Assessment Criteria
The learner can:
1. Produce a management plan for a given woodland site including operational and health and safety requirements
2. Present a woodland management plan appropriately to a given audience

Unit content

Management plan
Introduction, site description, inventory, maps, collected data, appropriate management objectives, recommended objectives, schedule of activities, operational requirements, health and safety requirements, professional style

Present
Style, accuracy, logical, tables, graphs, maps, written
Unit 329 Understanding Woodland Management
Outcome 3 Understand woodland management objectives

Assessment Criteria
The learner can:
1. Discuss the uses of woodlands
2. Explain potential conflicts which may exist in relation to the use of woodlands
3. Explain selected woodland management objectives

Unit content

Uses
Timber production, amenity, conservation, landscape, community use, recreation, wildlife, game, sporting

Potential conflicts
Land owners, health and safety, Local Planning Authority, site management, requirements of different users, local population, facilities, access, maintenance

Objectives
Timber production, amenity, conservation, landscape, community use, recreation, wildlife, game, sporting
Unit 329  Understanding Woodland Management
Outcome 4  Understand woodland management planning

Assessment Criteria
The learner can:
1. Explain the **structure, content and presentation** of a woodland management plan
2. Explain how to achieve the best balance between present and potential woodland uses covering:
   i.) Legal
   ii.) Environmental
   iii.) Requirement of woodland users
   iv.) Economic/financial
   v.) Physical
3. Explain **techniques used to assess** woodlands

Unit content

**Structure, content and presentation**
Introduction, site description, inventory, maps, collected data, appropriate management objectives, recommended objectives, schedule of activities, operational requirements, health and safety requirements, professional style, accuracy, logical, tables, graphs, maps, written

**Legal**

**Environmental**
Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, National Nature Reserve, Local Nature Reserve, National Park

**Requirement of woodland users**
Access, community use, recreation, timber production, conservation, wildlife, game, sporting

**Economic/financial**
Grants available for tree planting, local funding initiatives, community forests, national funding, Forestry Commission (eWGS), sale of products, sale of services

**Physical**
Topography, soil type, water courses, wildlife, plants, crop species, crop age, crop density, current management plans, public roads, internal access, car parking

**Assessment techniques**
Surveys, usage, biodiversity, ecology surveys, Condition, Opportunity and Threat (COT) assessments, landscape character, game cover, water catchment
Unit 329  Understanding Woodland Management

Notes for guidance

This unit is designed to provide the learner with knowledge and skills required to recognise features of woodland and create functional woodland management plans. Learners will locate, collect, summarise and present a wide range of inventory data and relevant information regarding woodlands and use this to inform management decisions. They will consider relative values and attributes of different woodland sites, and appropriate management objectives for these sites. The unit should cover a range of possible activities and potential sites.

Throughout the unit the emphasis should be on safe working and sustainability. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working. The importance of sustainable practices should be woven into the delivery throughout.

In Outcome 1, the learner will be required to understand and collect different data and information relevant to woodland and be able to interpret the different data collected. Learners should look at a wide range of possible data both on sites and available from different resources. It is anticipated that the delivery of this unit will be through some formal lectures, but will mainly be delivered through independent learner research and site visits to appropriate woodland.

Outcome 2 allows the learner to put into practice knowledge gained from the other learning outcomes. It is anticipated that the delivery of this unit will contain some formal lectures and discussion, but it requires site visits to woodland and supervised classroom activities. It may be beneficial to have visiting expert speakers to add relevance to the subject particularly those that have been involved woodland management plans. Learners will develop their presentation and writing skills and an appreciation of the importance of a professional style.

In Outcome 3, the learner will develop an understanding of the management objectives relevant to different woodland. Learners will also develop an appreciation of the conflicts which can exist in relation to woodland use. It is anticipated that the delivery of this outcome will be mainly through formal lecture and discussion but the addition of guided visits to woodland managed for different objectives would add context.

In Outcome 4, the learner will develop their understanding of the woodland management planning process. It is anticipated that this outcome will be delivered mainly through formal lectures, but will benefit from interactive learner activities and supervised classroom work. A thorough understanding of what constitutes a woodland management plan and how a woodland management plan is put together will form a key element of this outcome.

This unit aims to extend the learners knowledge and skills involved with woodland management. Emphasis should be placed upon the importance of management plans and health and safety. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of woodlands to add depth to the learner experience and put practices into context.

It is accepted that formal lectures will be necessary at level 3, but for this unit it is recommended that they are linked directly with interactive lessons in a real environment including identification sessions in the field. Learners must be given the opportunity to deal with a range of activities in different situations that reflect current industry trends.
References

Books


Websites

- [www.forestry.gov.uk](http://www.forestry.gov.uk) - The Forestry Commission
- [www.naturalengland.org.uk](http://www.naturalengland.org.uk) - Natural England
- [www.rfs.org.uk](http://www.rfs.org.uk) - Royal Forestry Society
- [www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk) - The Woodland Trust
Unit 330  Understanding Organism Identification

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of identifying organisms and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will develop skills in classification and learn how rules of classification have developed over time. These skills will be vital to roles such as surveying and habitat management. The learner will develop the ability to use a range of identification and classification methods applying these in their investigation of the five kingdoms.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand the principles underpinning classification and taxonomy
2. Understand the importance of classification
3. Know the identifying features of the five kingdoms
4. Be able to use classification skills

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

• An assignment covering practical skills and underpinning knowledge.
Unit 330  Understanding Organism Identification
Outcome 1  Understand the principles underpinning classification and taxonomy

Assessment Criteria
The learner can:
1. Explain the principles that underpin classification and taxonomy
2. Compare methods used to classify organisms

Unit content

Principles that underpin classification and taxonomy
Lamarckism, Linnean, Darwinism, evolutionary theories, observed similarities between species, changes in species over time, adaptation and natural selection

Methods
Physical features: morphology, pendactyl limbs, organs, phylogenetics, embryology.
The five kingdom system: Monera, Protista, Fungi, Plantae, Animalia
The taxonomic hierarchy: Kingdom, phylum, class, order, family, species
Unit 330  Understanding Organism Identification
Outcome 2  Understand the importance of classification

Assessment Criteria
The learner can:
1. Explain the need for classification of organisms
2. Discuss reasons for the development of scientific nomenclature

Unit content

The need for classification
Accurate identification of species, common scientific language, universal understanding, determination of poisonous species, invasives and those of value for medicine

Development of scientific nomenclature
Evolutionary theories, Darwinism, early theorists (Aristotle, Lamarc) and scientific developments
Unit 330 Understanding Organism Identification
Outcome 3 Know the identifying features of the five kingdoms

Assessment Criteria
The learner can:
1. Describe identifying features for the five kingdoms
2. Describe, where appropriate, significant taxa within the five kingdoms

Unit content

Identifying features
Monera: single-celled, prokaryotic.
Protista: single-celled, eukaryotic.
Animalia: eukaryotic, multi-cellular, no cell wall, autrophic
Plantae: multicellular, cell wall, photosynthetic
Fungi: eukaryotic, cell-wall non-cellulose

Significant taxa
Monera: Bacteria.
Protista: Algae and slime-moulds, Ciliophora, Rhizopoda, Zoomastigophora and Apicomplexa, Dinoflagellata, Euglenophyta, Chlorophyta, Phaeophyta, Rhodophyta and Myxomycota
Animalia: Cnidaria, Platyhelminthes, Nematoda, Annelida, Mollusca, Arthropoda, Echinodermata and Chordata, Pisces, Reptilia, Amphibia, Aves and Mammalia
Plantae: Bryophyta e.g. mosses and liverworts, Filicinophyta e.g. ferns, Gymnophyta e.g. conifers and Angiospermophyta (flowering plants) including monocotyledons and dicotyledons,
Fungi: Zygomycota, Ascomycota and Basidiomycota
Unit 330  
Understanding Organism Identification
Outcome 4
Be able to use classification skills

Assessment Criteria
The learner can:
1. Select identification keys for given organisms
2. Use identification keys to the level of species from each significant taxon
3. Develop dichotomous keys

Unit content

Identification keys
Dichotomous keys, random access, multi-access, pictorial

Identification of species
Utilise appropriate keys to identify species, for example a dichotomous to identify ferns to species level

Dichotomous keys
Create keys to identify species
Unit 330  Understanding Organism Identification
Notes for guidance

The ability to identify organisms to species level accurately is an important factor for those involved in all aspects of countryside management. For example, in carrying out surveys, habitat management, and engaging others in environmental education and interpretation.

This unit is designed to introduce the learner to classification methods and the knowledge and skills to identify organisms to species level. Learners will also gain an understanding of how the rules of classification have developed and utilise identification methods in a practical setting.

Outcomes 1 and 2 allow utilisation of the methods of classification, its development and the rules that apply to communicate this information around the world. Learners will be encouraged to explore the diversity of organisms inhabiting the environment and identify them according to their similarities.

In Outcomes 3 and 4 learners will be taught how to identify organisms using a range of methods. They will also develop skills to enable them to select appropriate means of identification to determine species within a range of different habitats.

This unit lends itself to a variety of teaching techniques and it is expected that as well as formal lectures, learners will benefit from a range of practical tasks, site visits and guest lectures. For example, activities such as field-work surveys and undertaking guided walks could be employed.

References

Books

Publishers) ISBN 1405307536
Unit 331  Understanding Principles of Forest Recreation

Level:       3

Credit value:  10

Unit aim

This unit aims to provide learners with an understanding of the principles of forest recreation and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will develop an appreciation of the benefits to society of forest recreation provision and be able to evaluate the factors that influence this provision. The potential problems and constraints associated with multiple use management will be examined, as well as development considerations. The learner will also be able to plan and promote recreational activities and provision.

Learning outcomes
There are three learning outcomes to this unit. The learner will:
1. Understand forest recreation activities
2. Understand forest recreation planning, development and promotion
3. Be able to plan forest recreational activities.

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
CU22 Construct, maintain and repair boundaries and access points
CU23 Construct, maintain and repair paths and related structures
CU24 Install, maintain and repair site furniture and structures
CU96 Develop, negotiate and agree proposals to offer services and products

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 331  Understanding Principles of Forest Recreation
Outcome 1  Understand forest recreation activities

Assessment Criteria
The learner can:
1. Explain the impact on society of forest recreation provision
2. Evaluate forest recreation activities
3. Discuss factors that influence the use of forests for recreation
4. Discuss potential problems and constraints to forest recreation provision

Unit content

Impact on society
Social (recreation opportunities, ecological awareness, education), economic (for example local investment, employment, property values) environmental (for example correct management, increased planting)

Recreation activities
Walking, cycling, picnics, horse riding, nature watching, motor sports, sporting (game/wildlife activities), education, orienteering, archery, camping, fishing, guided tours, nature walks, nature talks, conservation work, short courses

Factors that influence
Local area, local population, facilities, access, maintenance, disposable income, promotion
Impact of ownership and management objectives on recreational potential

Problems and constraints
Land availability, land owners, health and safety, Local Planning Authority, normal site management, requirements of different users, access and parking, damage to forest areas, litter pollution, fire risk through public access
Unit 331  Understanding Principles of Forest Recreation
Outcome 2  Understand forest recreation planning, development and promotion

Assessment Criteria
The learner can:
1. Describe appropriate design considerations to promote the use of forests for recreation
2. Discuss the physical and financial considerations when planning forest recreation
3. Summarise current legislation relevant to forest recreation
4. Evaluate methods of promoting forest recreation.

Unit content

Design considerations
Current use, current facilities, current flora and fauna, effect on current management, likely demand, public access, local population, public consultation, environmental impact, increased public access, areas requiring special measures, dangerous areas

Physical considerations
Topography, soil type, water courses, wildlife, plants, crop species, crop age, crop density, current management plans, public roads, internal access, car parking

Financial considerations
Financial viability, investment, grants, income, costs

Legislation

Promotion
Advertising, events (e.g. walks, competitions), sponsorship, schools, websites, media involvement, local engagement
Unit 331 Understanding Principles of Forest Recreation
Outcome 3 Be able to plan forest recreational activities

Assessment Criteria
The learner can:
1. Select appropriate forest **recreational activities** for a given situation
2. Prepare a **plan** to deliver forest recreational provision
3. Produce **promotional material** for forest recreational provision

Unit content

**Recreational activities**
Walking, cycling, picnics, horse riding, nature watching, education, orienteering, archery, camping, fishing, guided tours, nature walks, nature talks, conservation work, short courses

**Planning**
Aims, objectives, plans, future management, facility provision, structures, staffing, funding

**Promotional material**
Flyers, posters, leaflets, guides, presentations, website, artwork, interpretation board
Unit 331  Understanding Principles of Forest Recreation
Notes for guidance

This unit is designed to provide the learner with knowledge and skills required to prepare and plan forest recreational activities. Learners will develop an understanding of the methods of promoting and marketing recreational activities together with greater appreciation of the benefits that forest recreation can bring to society. The unit should cover a wide range of possible activities and potential sites.

Throughout the unit the emphasis should be on safe working and sustainability. It is expected that learners will be aware of safe working practices are familiar with accepted practices and behaviours within the context in which they are working. The importance of sustainable practices should be woven into the delivery throughout.

In Outcome 1, the learner will be required to understand and evaluate the different activities available for forest recreation provision. This outcome will require some formal delivery but should also be delivered through site visits (e.g. to current forest recreation schemes) and learner research into schemes currently in operation locally, nationally and globally. Learners should develop an understanding of the impact forest recreation provision has on society and increase their appreciation of the factors that influence the use of schemes. Developing an understanding of the problems and constraints that may be faced when setting up forest recreation provision, will assist in achieving outcome 2.

Outcome 2 covers aspects relevant to preparing for the implementation of forest recreation activities. It is anticipated that the delivery of this unit will be through formal lectures and discussion, but it would be beneficial to have visiting expert speakers to add relevance to the subject particularly those that have been involved in planning and implementing recreation activities. Learners will develop their knowledge of legislation relevant to forest recreation and opportunities available for successful promotion of planned activities. An appreciation of financial viability of activities coupled with local and nationally available funding opportunities will also be required.

In Outcome 3, the learner will be able to put into practice knowledge gained from the other learning outcomes. This outcome will require some formal delivery but it is expected that most will be delivered through supervised classroom activities and directed work. Learners will assess sites for recreation opportunities, plan for their implementation and produce material that could be used to promote relevant activities.

This unit aims to extend the learners knowledge and skills involved with providing forest recreation. Emphasis should be placed upon the importance of planning and appreciating the needs and requirements of any potential users of the forest recreation provision. It is important that the learner understands current legislation and funding opportunities in relation to forest recreation provision.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience and put practices into context.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity to deal with a range of activities in different situations that reflect current industry trends.
References

Books


Journals

Forestry and British Timber

Websites

www.forestry.gov.uk  The Forestry Commission
www.hse.gov.uk     The Health and Safety Executive
Unit 332  Livestock Use in Conservation Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of livestock use in conservation management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Britain is a historic farming nation and grazing has shaped landscapes creating a diverse range of habitats and promoting biodiversity. Conservation grazing utilises grazing animals to manage sites of conservation interest and to promote biodiversity. This unit will consider how agricultural practices interact with biodiversity and aims to develop the learner’s understanding of how employing conservation grazing practices can promote an ecological approach to sustainable management for areas of conservation interest.

Learning outcomes

There are three learning outcomes to this unit. The learner will:
1. Know the principles of conservation grazing
2. Understand how conservation grazing increases biodiversity and promotes sustainable management for a variety of habitats
3. Understand strengths and weaknesses for a range of conservation grazing strategies for a range of businesses.

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU87.1 Carry out habitat management

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 332  Livestock use in Conservation Management
Outcome 1  Know the principles of conservation grazing.

Assessment Criteria
The learner can:
1. Describe the principles of conservation grazing
2. Identify suitable animal species and breeds for use in conservation grazing projects for a range of habitats.
3. State factors that may influence the success of conservation grazing projects
4. Recognise factors to maintain the health and welfare of conservation grazing species.

Unit content

Principles of conservation grazing
Promote biodiversity, interaction between flora and fauna, ecological approach, naturalistic approach, conservation of habitats, low and high intensity habitat management

Animal species and breeds
Sheep, cattle, ponies, goats
Appropriate breeds for specific habitats for example Soay Sheep for cliff tops or chalk grasslands, Dartmoor ponies for moorland, Native Goats for scrub and steep slopes, Belted Galloways in New Forest

Habits
Upland, lowland, coastal, rural, semi-rural

Factors that may influence the success of conservation grazing projects
Climate, suitability of species, management of animals, accessibility, legislation, biodiversity action plans, classification of sites (for example Sites of Special Scientific Interest (SSSI)), interactions between animals, human interaction, stocking density

Factors to maintain the health and welfare of conservation grazing species
Abiotic factors (climate, soil, temperature, location, resources), biotic factors (flora and fauna, predation, grazing, water sources, competition), nutrition (main food sources, supplementary feeding), reproduction, prophylactic health care (parasite control, vaccination, foot care, dental care), welfare, five animal needs/freedoms
Unit 332   Livestock use in Conservation Management
Outcome 2 Understand how conservation grazing increases biodiversity and promotes sustainable management for a variety of habitats.

Assessment Criteria
The learner can:
1. Discuss the interaction between flora and fauna that occurs in conservation grazing
2. Describe how the interaction between flora and fauna promotes sustainable management of a variety of habitats

Unit content

Interaction between flora and fauna
Effects of grazing on grass and flower growth, seed dispersal and distribution, animal role in selective grazing, eating unwanted species, enabling growth and development of desirable species, manuring and improved fertility of grazed area

Sustainable management
Impact on biodiversity, reduction in pesticide and fertiliser use, integration into individual, local and national conservation and biodiversity action plans
Unit 332  Livestock use in Conservation Management
Outcome 3  Understand strengths and weaknesses for a range of conservation grazing strategies for a range of businesses

Assessment Criteria
The learner can:
1. Evaluate a range of commonly employed conservation strategies
2. Identify the reasons for using conservation grazing as a component of a habitat management plan
3. Appraise the use of conservation grazing as a habitat management tool for a range of businesses.

Unit content

Conservation strategies
Low intensity, high intensity, seasonality, non-intervention, naturalistic grazing, precise conservation grazing, environmental stewardship, integration into conservation and site management plans

Reasons for using conservation grazing
Reasons: sustainable management, promote biodiversity, tourism, local and national conservation agendas, individual policy, aesthetic, public perception, reduce habitat damage

Range of businesses
Businesses as appropriate to the learner’s setting e.g. those involved with conservation sites, agriculture, urban environments
Unit 332  Livestock use in Conservation Management

Notes for guidance

This unit will consider how agricultural practices interact with biodiversity and aims to develop the learner's understanding of how employing conservation grazing practices can promote an ecological approach to sustainable management for areas of conservation interest.

This unit should consider a representative range of livestock species (such as cattle, sheep, ponies, goats) and breeds appropriate to a range of habitats. It should include access for learners to practical visits to organisations employing livestock use in conservation management to enable evaluation of the strategies employed and the effect on biodiversity. Throughout the unit emphasis should be placed on the consideration of animal health and welfare.

The unit should emphasize the development of underpinning knowledge to enable formulation of conservation management strategies for a range of livestock species and habitat. Safe working practices and compliance with relevant legislation, codes of practice, biodiversity action plans and health and safety should be highlighted.

In Outcome 1, the learner will develop their knowledge of how livestock can be utilised as an effective strategy for conservation management for a range of habitats. Emphasis should be placed on the selection of appropriate animal species and breeds for a range of habitats and learners will need to demonstrate a thorough understanding of the factors that affect maintenance of animal health and welfare. It is envisaged that delivery will be formal, but should be complimented by practical visits, videos, guest speakers and links with local organisations that utilise conservation grazing.

In Outcome 2, learners will be able to describe the interaction that occurs during conservation grazing between flora and fauna and identify short and long term impact on a variety of habitats. Learners should be encouraged to analyse the welfare, ethical and ecological value of livestock use in a range of conservation strategies. Again, delivery is expected to be formal but should be complimented by interactive activities, site visits, videos and case studies to enable the learner to explore current utilisation of livestock for conservation management.

Outcome 3 enables the learner to build upon their foundation knowledge and to rationalise and appraise conservation grazing use in habitat management plans. Learners should be able to identify strengths and weaknesses within conservation grazing management plans from case studies. Conservation management plans at individual organisation, local and national level should be considered for short and long term utilisation. Delivery is expected to be formal and practical, but should incorporate opportunities for interactive activities, site visits, videos and case studies to enable the learner to explore current utilisation of livestock for conservation management. Learners should be encouraged, where possible, to contribute to conservation management plans in local organisations. This could be via production of a potential conservation plan or an information leaflet to promote conservation grazing to the public.

Learners working towards Level 3 should have underpinning knowledge of reproduction, digestion and nutrition for a wide range of animal species ecological concepts and knowledge of livestock husbandry. The unit aims to build upon this foundation knowledge to consider the use of livestock within specific conservation management plans for a variety of habitats. Learners should be exposed to practical environments employing different animal species and conservation methodologies to enable consideration of how different systems and appropriate strategies are employed successfully. It is important that the learner understands the influence of legislation, Government Departments, health and safety and bio security when utilising livestock for conservation management.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner, and mutual interaction would be valuable for learners.

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Teaching would also benefit from visits to a range of habitats employing a variety of conservation grazing strategies to add depth to the learner experience.

It is accepted that formal lectures will be necessary at Level 3 but for this unit it is recommended that this is complimented with practical opportunities and interactive sessions in a real environment.

References

Books

Journals
Journal of Agriculture
Agriculture, Ecosystems and Environment
Farm Business
Farmers Weekly
Sustainable Development

Websites
www.defra.gov.uk The Department for Environmental, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.farminguk.com Farming UK
www.ukagriculture.com UK Agriculture
www.wildlifetrust.org.uk The Wildlife Trust
www.nationalparks.gov.uk National Parks
www.grazinganimalsproject.org.uk The Grazing Animals Project
Unit 333  Undertaking Environmental Interpretation in Land-based

Level: 3
Credit value: 10

Unit aim
This unit aims to introduce learners to environmental interpretation skills and understanding and how this can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes
There are four learning outcomes to this unit. The learners will:
1. Know the role of environmental interpretation and media
2. Be able to produce an interpretive plan for a site
3. Be able to design a relevant piece of themed environmental interpretation
4. Understand how to evaluate the effectiveness of environmental interpretation

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
EC1.1 Communicate effectively with the public and others
EC6 Communicate environmental information
EC25 Research and plan environmental interpretations
EC26 Prepare and deliver interpretive and educational activities
EC27 Produce interpretive media

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 333  Undertaking Environmental Interpretation in Land-based

Outcome 1  Know the role of environmental interpretation and media

Assessment Criteria
The learner can:
1. Describe the aims, purpose and benefits of environmental interpretation
2. Outline media that can be used to interpret selected sites

Unit content

Aims purpose and benefits
Origination of concept of interpretation, principles of interpretation (Tilden's six principles, Beck and Cables principles), reasons for interpretation, differences between interpretation and instruction, types of audience (captive, noncaptive, age, background, interests) and setting (for example country park, nature reserve, reservoir, nature walk, forest, botanical gardens, zoo)

Media
Guided interpretation (guided trails, tours, talks, demonstrations, role play, living history demonstrations, puppet shows, use of visual aids), self guided interpretation (interpretive panels and boards, indoor and outdoor exhibits, signage, information centre, audio headsets, guide books, leaflets, maps, touch tables, DVDs, photographs), reasons for using guided or self guided interpretation methods
Unit 333 Undertaking Environmental Interpretation in Land-based

Outcome 2 Be able to produce an interpretive plan for a site

Assessment Criteria
The learner can:
1. Carry out interpretive planning
2. Explain features of effective environmental interpretation planning

Unit content

Interpretive planning
Planning interpretive objectives, typical visitor numbers and profile (age, interest, prior knowledge, language, educational level, reason for visiting), group sizes and dynamics, planning interpretation to meet the needs of different visitor types, consideration of relevance to setting, selection of appropriate media, consideration of accessibility, planning guided and self guided interpretive activities, script/talk/story board planning, planning walks/trails, planning interpretive media (content, location and layout), planning themes and making interpretation interesting, relevant, enjoyable and organised

Environmental interpretation
Self guided interpretation: use of design principles, organisation and layout, size of text, text style, use of pictures and photographs, use of colour, interactive features, selection of construction materials, advantages and disadvantages of different construction materials
Guided interpretation: organisation of content, presentation skills, use of audio visual aids, use of props and resources, clarity of presentation
Unit 333  
Undertaking Environmental Interpretation in Land-based

Outcome 3  
Be able to design a relevant piece of themed environmental interpretation

Assessment Criteria  
The learner can:
1. Describe processes that make an effective piece of themed environmental interpretation
2. Carry out themed environmental interpretation for a given site

Unit content

Processes  
Planning, use of themed interpretation, building interpretive media around a theme, consideration of site layout and accessibility, consideration of visitor types and numbers, group sizes and dynamics, construction of signage, displays and exhibits, use of design principles, use of pictures and photographs, use of methods to protect media (for example use of roof or shelter for outside material, use of preservatives, selection of durable construction material)

Effective  
Meets objectives for interpretation, conveys environmental information in an interesting, relevant, enjoyable and organised way, accessible for all visitors (physically and conceptually), meets safety requirements, within budget

Themed environmental interpretation 
Self guided interpretation: use of design principles, organisation and layout, size of text, text style, use of pictures and photographs, use of colour, interactive features, selection of construction materials, advantages and disadvantages of different construction materials
Guided interpretation: organisation of content, presentation skills, use of audio visual aids, use of props and resources, clarity of presentation
Importance of selecting themes, identification of themes, use of thematic map in planning walks/trails, using themes for verbal and written media
Unit 333  Undertaking Environmental Interpretation in Land-based

Outcome 4  Understand how to evaluate the effectiveness of environmental interpretation

Assessment Criteria
The learner can:
1. Explain **techniques** used to evaluate selected environmental interpretation
2. Evaluate environmental interpretation

Unit content

**Techniques**
Self evaluation (using criteria, checklist), evaluation by others (questionnaire, interview, observation, direct and indirect questioning, open and closed questions, scoring and grading), when to carry out evaluation (before, during and after interpretation), how to use evaluation to suggest recommendations and improvements

**Evaluate**
For meeting objectives, for conveying environmental information in an interesting, relevant, enjoyable and organised way, accessibility for all visitors (physically and conceptually), meeting safety requirements, cost effectiveness, management implications, sustainability
This unit introduces learners to the principles and benefits of environmental interpretation, and enables them to develop practical skills in planning, carrying out and evaluating environmental interpretations.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible.

For Outcome 1 delivery is likely to include visits to a range of settings to enable learners to witness the plethora of environmental interpretive media and techniques in operation. Some classroom based and research activity is also anticipated, to enable learners to understand the concepts of interpretation and how it differs from instruction. A guest speaker involved in leading environmental interpretation would also help students to gain an understanding of the elements of planning involved.

For Outcome 2 learners need to have the opportunity to develop practical skills in producing environmental interpretations. Learners will need to have supervised practice in developing the skills in leading a guided interpretation, as well as the construction skills in creating a self guided one. Delivery will also need to include consideration of themes, their importance and how they can be determined. It would be helpful for this to be delivered after the visits for outcome one have taken place, so that learners have an understanding of the types of media and their relative advantages and disadvantages.

For Outcome 3, delivery is likely be closely linked to Outcome 2. Outcome 3 provides much of the underpinning theory for the production of the themed environmental interpretation for Outcome 2, and as such may be best delivered in parallel.

For Outcome 4 learners will need to gain skills in evaluating environmental interpretation, which may include classroom based delivery and discussion. It will be most helpful if learners have the opportunity to practice evaluation of professionally produced materials, those of other learners and their own. This will enable valuable evaluative skills to be effectively developed.

References


Websites

www.heritageinterpretation.org.uk Association for Heritage Interpretation
www.interpnet.com
www.scotinterpnet.org.uk
www.zoolex.org

National Association for Interpretation
Scottish Interpreters Network
Zoolex Zoo Design Organisation
Unit 334  Understanding Heathland Habitat Management

Level: 3
Credit value: 10

Unit aim
This unit aims to introduce learners to the skills and knowledge in heathland habitat management and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

The unit ensures that the learner is given the necessary knowledge, experience and management skills to enable them to manage an area of heathland effectively. Assessment methods include the presentation of a management plan, and practical skills assessment.

Learning outcomes
There are four learning outcomes to this unit. The learners will:
1. Understand the origins and ecology of heathlands
2. Know potential threats to the existence of heathlands
3. Know appropriate management techniques for heathland sites
4. Be able to plan and carry out practical heathland management

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
CU87 Carry out habitat management work
CU88 Manage habitats

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 334  Understanding Heathland Habitat Management
Outcome 1  Understand the origins and ecology of heathlands

Assessment Criteria
The learner can:
1. Explain the **historical development** of heathlands
2. Outline the **ecology** of heathlands
3. Explain key elements of **heathland species**
4. Discuss the **ecology and habitat requirement** of one heathland species

Unit content

**Historical development**
Extent of forested area in post-glacial Britain, key historical developments: stone age clearance of woodland, heathland expansion during Mesolithic period and Bronze Age, effects of settlement and deforestation in Medieval and Napoleonic times, effects of technology and transport during the 19th and early 20th century, expansion of urban areas, afforestation and agricultural developments in late 20th and early 21st century, recent recognition of importance of heathland conservation

**Ecology**
Definition of heathland, difference between lowland heath and moorland (relevant models for example plant succession models, continuous woodland model), biotic and abiotic factors relating to the existence and distribution of heathlands, formation of podsolic soils, wet and dry heath communities, plant adaptation to low levels of nitrogen, characteristic heathland species (plants, invertebrates, amphibians, reptiles, mammals and birds), stages of growth for heathers and gorses

**Heathland species**
Dwarf shrubs (for example heather, bell heather, cross-leaved heath), gorses, mosses (for example *Sphagnum*), grasses (for example purple moor-grass, Bristle bent grass, Wavy hair-grass), bracken, Bog orchid, Marsh gentian, Spiked speedwell

**Ecology and habitat requirement**
Characteristics of heathland habitats (dry heath, humid heath, wet heath, mire, grassland), factors affecting heathland community development (soil nutrient availability, soil moisture, frost, precipitation patterns)
Unit 334  Understanding Heathland Habitat Management
Outcome 2  Know potential threats to the existence of heathlands

Assessment Criteria
The learner can:
1. Outline selected potential threats to existing heathland
2. Describe the impact of potential threats to existing heathland species and communities
3. State the protection regulations protecting heathlands

Unit content

Potential threats
Tree invasion, bracken invasion, grassland replacing heather, unmanaged fire, mire drying, erosion, pollution, recreational use (for example walking, horse riding), heathland loss due to road and housing development

Impact of potential threats
Damage or destruction of habitats, reduction in species numbers and diversity, loss of rare plants, loss of dependent species, accelerated succession, soil enrichment leading to non-heathland vegetation

Protection regulations
Unit 334  Understanding Heathland Habitat Management
Outcome 3  Know appropriate management techniques for heathland sites

Assessment Criteria
The learner can:
3. Identify selected techniques available for heathland management
4. Describe ecological and cultural objectives for heathland management
5. Outline conflicting management requirements for promoting heathland diversity
6. State how arisings can be disposed of ecologically

Unit content

Techniques
Scrub control (for example clear trees and scrub, treat regeneration, weed seedlings), grass control (for example scarify, mowing, grazing regimes, stocking rate density, choice of grazing livestock), heather management (for example burning, cut and collect), gorse management (for example coppicing, burning), bracken control (for example use of herbicide, cutting), timing and importance of timing of operations

Ecological objectives
Objectives relating to site ecology, for example management for selected species of importance, improvements to species biodiversity, objectives for species recovery, heathland restoration, maintaining existing habitat, reducing fragmentation

Cultural objectives
Objectives relating to landscape character, historical features, archaeology, local community and user interests, cultural and amenity value

Conflicting management requirements
Identification of conflicts, actions to protect one species which may reduce another, methods used to prioritise species, species significance (ecologically or culturally), public opinion, cost factors, funding constraints, sustainability, regulations

Ecological disposal
Reasons for removing arisals (to prevent litter formation, to prevent nutrient retention, to discourage further succession), removal in saleable lengths, use of woodchipper or specialist baler to improve saleability of unmarketable timber
Unit 334  Understanding Heathland Habitat Management  
Outcome 4  Be able to plan and carry out practical heathland management  

Assessment Criteria  
The learner can:  
1. Plan for, and carry out practical heathland habitat management to achieve given objectives  
2. Evaluate selected practical heathland habitat management  
3. Outline the recommendations for improving management plans  
4. Conduct a risk assessment of practical activity  
5. Interpret a management plan  

Unit content  

Heathland habitat management  
Scrub control (for example clear trees and scrub, treat regeneration, weed seedlings), grass control (for example scarify, mowing, grazing regimes, stocking rate density, choice of grazing livestock), heather management (for example burning, cut and collect), gorse management (for example coppicing, burning), bracken control (for example cutting), timing and importance of timing of operations, use of equipment and machinery, use of Personal Protective Equipment (PPE)  

Evaluate  
For meeting objectives, for improvements to heathland habitat, for improvements to conservation value, for timeliness of operation, sustainability of working practices, use of safe working practices, cost and funding implications, compliance with regulations  

Management plan  
Objectives, methods and techniques, prioritisation of actions, timing of actions, balancing conflicting requirements, reviewing and recommending alternative management options, methods of evaluating and determining success  

Risk assessment  
Assessment of likelihood of risk, severity of risk, methods to mitigate risk, assessment of risks to self and others
Unit 334  
Understanding Heathland Habitat Management  
Notes on guidance  

This unit is designed to provide learners with an understanding of the importance of heathland habitats for conservation, their historical development and the careful management required to maintain their characteristics. Learners will also gain the opportunity to develop their practical skills in heathland habitat management.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible and practical activities should be planned to minimise disruption to habitats and their species. Whichever delivery methods are used, it is essential that tutors stress that a number of heathland species are protected by law, and that licences from Natural England are required to handle them.

For Outcome 1, delivery is likely to be a mix of classroom activity and research relating to the development of heathland. It is anticipated that the ecology of heathland species and the characteristics of different heathland habitat categories will be explored through visits to a range of heathland areas. It is important that learners gain an understanding of the relationship between human activity through the ages and heathland development and distribution. The development of learners’ identification of key elements of heathland species is likely to require learners to practice identifications. Where possible this should be carried out by viewing live specimens in situ, or alternatively using high quality photographs.

For Outcome 2, learners need to gain an understanding of the potential threats to heathland and their impact. Delivery could be assisted by visits to heathland areas, particularly those where threats or their impact are in evidence. A guest speaker, such as a countryside manager of a heathland area, could explain how they manage the area to mitigate the impact of threats. Learners also need to gain an overview of the relevant legislation and regulations, including the designation of heathland areas as SSSI.

Delivery of Outcomes 3 and 4 is likely to be linked.

For Outcome 3, delivery is likely to include practical activity to enable learners to identify management techniques, their objectives and impact. Delivery also needs to explore the types of objectives of importance in heathland habitat management, and the potentially conflicting management requirements in species protection. A guest speaker involved in heathland management could help to articulate these potential conflicts, and how they reach a decision about which species to prioritise.

For Outcome 4, learners will need supervised access to a heathland habitat to carry out practical management activity. Given the careful management planning of most UK heathland, it is important to plan this well in advance to fit with the timing planned by the land owner or managing body. The importance of heath and safety should be stressed, as should the importance of minimising environmental impact through the habitat management activities.
References

Books

Rose F. 2006. The Wild Flower Key: How to Identify Wild Plants, Trees and Shrubs in Britain and Ireland (Frederick Warne) ISBN 0723251754

Websites

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www.dardni.gov.uk Department of Agriculture and Rural Development (NI)
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk Environment Agency
www.hants.org.uk/newforest The New Forest
www.jncc.gov.uk Joint Nature Conservation Committee
www.naturalengland.org.uk Natural England
www.ukbap.org.uk UK Biodiversity Action Plan
www.wildlifetrusts.org County Wildlife Trusts
Unit 335  Understanding Freshwater and Wetland Management

Level: 3
Credit value: 10

Unit aim
This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will investigate the full range of freshwater habitats found in the UK (lentic, lotic and wetland) and their ecology. They will undertake practical surveys of freshwater habitats and use their results to evaluate the conservation importance of the sites and undertake practical management of a freshwater site for the conservation management of freshwater habitats. This unit is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes
There are **four** learning outcomes to this unit. The learners will:
1. Understand ecological characteristics of lentic freshwater habitats
2. Understand ecological characteristics of lotic freshwater habitats
3. Understand ecological characteristics of wetland habitats
4. Be able to carry out freshwater habitat conservation management activities

Guided learning hours
It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
EC2 Survey and report on the condition of the environment
EC23 Prepare, conduct and report on field surveys
CU87 Carry out habitat management work
EC3 Maintain and improve channel capacity by manual operations

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
Unit 335  Understanding Freshwater and Wetland Management

Outcome 1  Understand ecological characteristics of lentic freshwater habitats

Assessment Criteria
The learner can:
1. Safely carry out a survey of the ecological characteristics of a selected lentic freshwater habitat to meet given objectives
2. Record and interpret lentic freshwater data collected

Range
Lentic freshwater habitat: freshwater habitat in standing or still water (lake, pond, pool, reservoir, gravel pit)

Unit content

Safely
In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

Survey
Plan survey: identify objectives, plan survey method, location, timing, identify equipment and resources required, possible sources of error, methods to minimise errors
Species surveying: species identification, for example using keys, guides, guide books, use of appropriate equipment, use of survey methods for example National Pond Survey, pond dipping, netting, National Amphibian and Reptile Recording Scheme
Environmental surveying: climate surveying, water surveying, surveying physical characteristics

Ecological characteristics
Abiotic characteristics: physical characteristics (size: length, width, depth, volume, perimeter; shape, turbidity, location and catchment), chemical characteristics (pH, nitrates, phosphates, dissolved oxygen, Biochemical Oxygen Demand), water clarity
Biotic characteristics: bacteria, algae, invertebrates, fish, amphibians, reptiles, birds, mammals, vegetation

Record and interpret
Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report), interpretation: comparison with survey objectives, draw conclusions
Unit 335 Understanding Freshwater and Wetland Management

Outcome 2 Understand ecological characteristics of lotic freshwater habitats

Assessment Criteria
The learner can:
1. Safely carry out a survey of the ecological characteristics of a selected lotic freshwater habitat to meet given objectives
2. Record and interpret lotic freshwater data collected

Range
Lotic freshwater habitat: Freshwater habitat in moving water (river, stream, spring)

Unit content

Safely
In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

Survey
Plan survey: identify objectives, plan survey method and location, timing of survey, identify equipment and resources required, possible sources of error, methods to minimise errors
Surveying: Use of River Habitat Survey (method of surveying and recording, use of spot checks to record predominant channel, bank and river corridor features, identifying channel vegetation types for example use of keys, guides), use of Waterways Breeding Bird Survey (method of surveying and recording, use of transects, species identification)

Ecological characteristics
Abiotic factors: physical characteristics (river channel form: long profile, cross sectional shape, planform; flow, breadth, depth, particle type and size, catchment area and characteristics, riparian area characteristics, bank type and features, river features for example meanders, pools, riffles, oxbows); climate characteristics (light, temperature, rainfall); chemical characteristics (pH, nitrates, phosphates, dissolved oxygen, Biochemical Oxygen Demand)
Biotic characteristics: bacteria, algae, invertebrates, fish, amphibians, reptiles, birds, mammals, vegetation

Record and interpret
Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report), interpretation: comparison with survey objectives, draw conclusions
Unit 335 Understanding Freshwater and Wetland Management

Outcome 3 Understand ecological characteristics of wetland habitats

Assessment Criteria
The learner can:

1. **Safely** carry out a **survey** of the **ecological characteristics** of a selected wetland freshwater habitat to meet given objectives, recording and interpreting collected data
2. **Record and interpret** wetland freshwater data collected
3. Outline possible causes of **data collection error**

Range
Wetland freshwater habitat: as defined by Ramsar international wetland conservation treaty

Unit content

**Safely**
In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

**Survey**
Plan survey: identify objectives, plan survey method and location, identify equipment and resources required, possible sources of error, methods to minimise errors
Species surveying: Wetland Bird Survey, Phase 1/ National Vegetation Classification (NVC) methodology, species identification, for example using keys, guide books, use of appropriate equipment, use of line transects and quadrats
Environmental surveying: climate surveying, water surveying, surveying physical characteristics

**Ecological characteristics**
Abiotic characteristics: physical characteristics (size: length, width, area, perimeter, depth, shape, location, catchment, flow), chemical characteristics (pH, nitrates, phosphates, dissolved oxygen, Biochemical Oxygen Demand, salt content)
Biotic characteristics: bacteria, algae, invertebrates, fish, amphibians, reptiles, birds, mammals, vegetation
Convention on Wetlands (Ramsar) sites, characteristics and importance

**Record and interpret**
Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report), interpretation: comparison with survey objectives, draw conclusions

**Data collection error**
Collection errors, recording errors, identification errors, sampling errors, calculation errors
Unit 335  Understanding Freshwater and Wetland Management

Outcome 4  Be able to carry out freshwater habitat conservation management activities

Assessment Criteria
The learner can:
1. **Safely** carry out practical management on a freshwater site to meet given specifications
2. Describe the use of conservation management techniques
3. Recommend improvements to freshwater habitat management

Unit content

**Safely**
In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others, identification and avoidance of risks specific to freshwater sites

**Practical management/conservation management techniques**
Use of habitat action plans and species action plans
- **Lentic**: lake/pond creation and/or management (for example clearing, planting, managing succession, managing invasive species)
- **Lotic**: restoration of natural features, creation of off stream ponds, river margin manipulation, channel enhancement (for example dredging, desilting), bank protection and enhancement, planting, footpath creation and maintenance, improvement of habitats for specific species (for example construction of otter holts, bat boxes)
- **Wetlands**: use of grazing (livestock choice, stocking density, grazing regime), water level management, grassland management, reed bed planting and management, scrub and tree management, visitor management (for example reducing disturbance to winter wildfowl)

**Improvements**
For better meeting objectives, for meeting new objectives, for improvements to freshwater habitat, for improvements to biodiversity and conservation value, for timeliness of operation, sustainability of working practices, environmental impact, use of safe working practices
Unit 335  
Understanding Freshwater and Wetland Management

Notes for guidance

This unit is designed to provide learners with an understanding of the range of freshwater habitats and their characteristics, together with the species they support. Learners will also gain practical skills in surveying the different types of freshwater and wetland habitat, and in practical habitat management.

As learners will be engaged in practical activity in and near water there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible, and practical activities should be planned to minimise disruption to habitats and their species. It is also important to gain the landowner’s permission before undertaking surveying or habitat management activity.

For Outcome 1, learners need to gain an understanding of the characteristics of lentic habitats, and the types of survey that will inform future management and conservation planning and action. It is likely that delivery will include visits to a range of ponds, lakes and other features such as gravel pits, and it will be particularly useful if this includes habitats of very different sizes. Learners will need the opportunity to develop their practical surveying skills within a range of these habitats.

For Outcome 2, delivery is likely to include visits to a range of rivers, streams and springs, including learners gaining skills in practical surveying in a range of settings. It will be useful for learners to witness a river at different stages, for example near to its source contrasted with meanders further downstream. Learners will also need the opportunity to practice species identification using keys and guides.

For Outcome 3, learners will need to gain an understanding of the types of freshwater wetland habitat that exist in the UK. Given their significance, both in size and biodiversity it would be helpful for this to include case study and audio visual material based on The Broads, even if distance precludes a visit. Learners will need the opportunity to visit areas of wetland, and take part in practical surveying. A guest speaker may add interest, for example discussing grazing management on wetland areas.

For Outcome 4, learners will need supervised access to a range of freshwater habitats to carry out a variety of practical management tasks. The importance of heath and safety should be stressed, particularly given that such practical work will take place in or next to water, as should the importance of minimising environmental impact through the habitat management activities.
References

Books


Websites

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www.bto.org.uk British Trust for Ornithology
www.ceh.ac.uk Centre for Ecology and Hydrology
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk Environment Agency
www.greatfen.org The Great Fen Project
www.hse.gov.uk Health and Safety Executive
www.pondconservation.org.uk Pond Conservation
www.ramsar.org The Ramsar Convention on Wetlands
www.rspb.org The Royal Society for the Protection of Birds
www.sepa.org.uk Scottish Environment Protection Agency
www.therrc.co.uk The River Restoration Centre
www.ukbap.org.uk UK Biodiversity Action Plan
www.wwt.org.uk Wildfowl and wetlands trust
Unit 336  Undertaking Urban Habitat Conservation

Level: 3
Credit value: 10

Unit aim

This unit aims to introduce learners to urban habitat conservation skills and knowledge and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further /higher education.

The learner will investigate major types of urban terrestrial and aquatic habitats and ecological processes of importance to urban habitats. They will study problem areas of urban ecology such as pollution and invasive species and their impacts. They will explore principles and constraints involved in the management of urban habitats. The unit is designed primarily for learners in a centre-based setting looking to progress into the sector or onto further education.

Learning outcomes

There are four learning outcomes to this unit. The learners will:
1. Be able to survey the ecological characteristics of urban habitats
2. Understand ecological processes influencing urban habitats
3. Understand the problems caused by pollution and invasive species
4. Know the conservation value of urban habitats

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC2 Survey and report on the condition of the environment
EC23 Prepare, conduct and report on field surveys.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.
**Unit 336**  
**Undertaking Urban Habitat Conservation**

**Outcome 1**  
Be able to survey the ecological characteristics of urban habitats

**Assessment Criteria**

The learner can:

1. **Plan** an urban habitat survey
2. Select appropriate **survey techniques and equipment**
3. **Safely** carry out urban terrestrial and aquatic habitat surveying
4. **Report on** the structures, features and ecosystem of an urban habitat

**Range**

Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

**Unit content**

**Plan a survey**
Identify objectives, plan survey method and location, identify equipment and resources required, possible sources of error, methods to minimise errors

**Survey techniques and equipment**
Species surveying: use of quadrat and transect methods, species identification, for example using keys, guide books, use of appropriate equipment, for example pitfall traps, sweep nets
Environmental surveying: climate surveying e.g. light, wind, temperature, rainfall, water surveying for example temperature, nitrate level, flow, clarity, soil sampling, for example soil characteristics, mineral content, water content

**Safely**
In accordance with Health and Safety at Work Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

**Report on**
Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report)
Unit 336  **Undertaking Urban Habitat Conservation**
Outcome 2  Understand ecological processes influencing urban habitats

**Assessment Criteria**
The learner can:
1. Explain **physical processes** affecting urban habitats
2. Explain **spatial processes** affecting urban habitats
3. Explain **biotic processes** affecting urban habitats

**Range**
Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

**Unit content**

**Physical processes**
Effect of climate and microclimate (rainfall, windspeed and prevailing direction, temperature, light, humidity), effect of soil (soil type, characteristics, mineral content, organic matter, water content), effect of man made physical processes, for example building, demolition, road creation, effects on water courses for example building on flood plains, creation of flood defences, sources of pollution

**Spatial processes**
Habitat fragmentation, edge effects, ecotones, metapopulation concept, linear habitats for example road verges, river banks, railway embankments

**Biotic processes**
Species adaptations to urban environments, urban food chains, predator and prey relationships, effects of introduction on non-native species, species dispersal, movement between habitats, human influence for example garden cultivations, pet keeping, species feeding
Unit 336  Undertaking Urban Habitat Conservation
Outcome 3  Understand the problems caused by pollution and invasive species

Assessment Criteria
The learner can:
1. Assess problems associated with urban pollutants and invasive species
2. Identify management strategies to counter urban pollutants and invasive species

Range
Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

Unit content

Problems
Changes to species balance and biodiversity (decline of some species, increase in other species), effects of toxic pollutants on species (physiological response, avoidance, bioaccumulation, trophic transfer)

Urban pollutants
Air and land pollutants (for example litter, heavy metals, particulates, sulphur dioxide, nitrogen oxide), water pollutants (for example nitrogen, oil, industrial and domestic effluents), other pollutants: light, noise, heat

Invasive species
Non-indigenous species that adversely affect the habitat being invaded/introduced into, characteristics of invasive species that enable them to outcompete indigenous species, for example rapid reproduction, high growth rate, high dispersal ability, adaptability to environmental conditions, examples of plant and animal invasive species for example Japanese knotweed, Giant hogweed, Oxford ragwort, grey squirrel, Topmouth Gudgeon, Canada goose, Sika deer

Management strategies
Invasive species reduction (for example for animals planned cull programmes, capture and release, for plants use of herbicides, weeding), introduction of competitor species, changes to habitats to favour non-invasive species, air, water and soil monitoring, pollution reduction and avoidance, compliance with legislation
**Unit 336**  
**Undertaking Urban Habitat Conservation**

**Outcome 4**  
Know the conservation value of urban habitats

**Assessment Criteria**

The learner can:
1. Describe the **conservation value** of a given urban habitat
2. Identify **differences** between urban and rural habitat conservation

**Range**

Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

Rural habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a countryside environment

**Unit content**

**Conservation value**

Species (flora and fauna) presence and biodiversity, presence of specific or significant species (for example rare or endangered), value for amenity, recreation or educational use, importance for human quality of life

**Differences**

Management strategies, conservation objectives, other objectives (for example value for amenity, recreational or educational use), size and scale, species types and diversity, problems encountered, other land uses and conflicts, funding, community involvement
Urban habitats were once believed to be primarily for human benefit, through amenity and recreational use. It is now understood that they are significant in their own right as habitats, providing a range of habitat types and food sources for many species. This unit is designed to provide learners with an understanding of the features of urban habitats and the factors affecting them, and to equip them with some practical surveying skills. As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible and practical activities should be planned to minimise disruption to habitats and their species.

For Outcome 1 delivery is likely to be predominantly practically based, with the opportunity to survey a range of urban habitats. This should include aquatic habitats, such as streams, rivers, ponds and canals as well as terrestrial habitats. It is important that delivery includes all aspects of completing a survey, from planning to reporting on results. Some classroom based delivery is likely to be required to enable learners to gain an understanding of statistical techniques and results presentation.

For Outcome 2 learners need to gain an understanding of the processes affecting urban habitats. Delivery is likely to include some classroom based activity and research in understanding the types of process which can affect habitats. It will be important to supplement this with visits, preferably to a range of urban habitats to explore the effects of different processes. This could be augmented by the use of audio visual materials to demonstrate the effects of different processes not evident in the local area.

For Outcome 3 delivery is likely to include learner research and classroom based activity to investigate the types of pollutants and invasive species and their effects on urban habitats and species biodiversity. Visits to urban habitats showing the effects of pollutants or invasive species would add interest. A guest speaker would also be of benefit, such as a head gardener describing management strategies to reduce invasive plant species.

For Outcome 4 learners will need access to an urban habitat so that they can assess its conservation value. This may well be linked with delivery for outcome 1. It will also be helpful for learners to visit a range of urban and rural habitats to enable them to identify differences. This could be supplemented with audio visual material showing habitats from other locations.
References

Books


Websites

www.bto.org British Trust for Ornithology
www.dardni.gov.uk Department of Agriculture and Rural Development (NI)
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk Environment Agency
www.rspb.org.uk Royal Society for the Protection of Birds
www.urbanecology.org.uk Trust for Urban Ecology
Unit 337  Undertaking Upland Habitat Management

Level: 3

Credit value: 10

Unit aim
This unit aims to introduce learners to the skills and knowledge in urban habitat management and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Many of the UK upland habitats are a result of deflected succession and, without proper management, wilderness areas of the countryside could be lost. Learners will develop the knowledge and skills required to plan, carry out practical management for a variety of upland habitats.

Learning outcomes
There are four learning outcomes to this unit. The learners will:
1. Know upland habitats of the UK
2. Be able to survey a selection of upland habitats
3. Understand upland habitat threats and legislative controls
4. Be able to carry out practical upland habitat management

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
CU87 Carry out habitat management work
CU88 Manage habitats
EC2 Survey and report on the condition of the environment
EC23 Prepare, conduct and report on field surveys

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• An assignment covering practical skills and underpinning knowledge.
Unit 337  Undertaking Upland Habitat Management
Outcome 1  Know upland habitats of the UK

Assessment Criteria
The learner can:
1. Identify and describe upland habitats in the UK
2. Describe environmental needs and distribution of indicator species
3. State the major differences between a variety of upland habitats:
   - Moorlands
   - Blanket mires
   - Peat areas
   - Upland wetlands
   - Arctic/alpine
   - Tors
   - Limestone pavements

Unit content

Upland habitats
Habitats: moorland, woodland, upland grasslands, blanket bog, mires, peat areas, heath, upland wetlands, alpine heath; structural features (for example tors, limestone pavements), distribution and location of UK upland habitats, National Park designation

Environmental needs
Climate (rainfall, temperature, wind, light, humidity), exposure, altitude, shade, shelter, soil (type, characteristics, pH, nutrients, water availability), biotic factors (presence or absence of other species, competition, grazing, parasitism)

Indicator species
Species whose presence indicates particular upland features and characteristics: examples include soil acidity (for example heather, bilberry), air quality (for example lichens), bogs and mires (for example Sphagnum mosses)

Differences
Features, characteristics, landscape, geological features, location, habitat stability/fragility, species present (plant species, tree and shrub species, mammal, bird, reptile, amphibian, and invertebrate species)
Unit 337  
Undertaking Upland Habitat Management

Outcome 2  
Be able to survey a selection of upland habitats

Assessment Criteria
The learner can:
1. Outline the PPE required and Site Specific Risk Assessment for practical activity on upland areas
2. Carry out surveys of selected upland habitats
3. Identify a range of upland species of flora and fauna

Unit content

Risk Assessment
Assessment of likelihood of risk, severity of risk, methods to mitigate risk, assessment of risks to self and others, use of Personal Protective Equipment (PPE)

Surveys
Plan survey: identify objectives, plan survey method and location, identify equipment and resources required, possible sources of error, methods to minimise errors, species surveying, use of quadrat and transect methods, use of appropriate equipment, for example pitfall traps, sweep nets Environmental surveying: climate surveying e.g. light, wind, temperature, rainfall, soil sampling, e.g. soil characteristics, mineral content, water content, record results, use of statistical analysis, presentation of results, quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report)

Identify
Identification using keys, guides, guide books, higher and lower order plant species e.g. lichens, fungi, grasses, trees, higher and lower order animal species for example invertebrates, birds, amphibians, reptiles, and mammals
Unit 337  
Undertaking Upland Habitat Management

Outcome 3
Understand upland habitat threats and legislative controls

Assessment Criteria
The learner can:
1. Explain threats to selected upland habitats
2. Discuss legislation relevant to upland habitats
3. Evaluate the commercial exploitation of upland habitats:
   - Afforestation
   - Peat cutting
   - Drainage
   - Over grazing
   - Lack of management

Unit content

Threats
Human activity: sporting and recreational use, impact of tourism and visitor pressure, agricultural activity, overgrazing, environmental threats e.g. acidic deposition, global warming, air pollution, mires drying out, encroachment of trees and scrub

Legislation

Commercial exploitation
Reasons for exploitation, impact of exploitation on selected habitats, commonly seen problems of exploitation: afforestation, peat cutting, drainage, over grazing, lack of management, tourism and recreational activities
Unit 337  Undertaking Upland Habitat Management
Outcome 4  Be able to carry out practical upland habitat management

Assessment Criteria
The learner can:
1. Select methods of managing an upland habitat, including livestock grazing, burning and cutting
2. Carry out practical upland habitat management activities
3. Evaluate methods of managing an upland habitat, including livestock grazing, burning and cutting

Unit content

Select methods
Planning and use of equipment and materials, resource requirements of alternative methods, timing and importance of timing of operations, use of equipment and machinery, use of PPE, health and safety implications of method choice, effectiveness in meeting habitat management objectives, level of skill required

Practical upland habitat management activities
According to nature of upland, for example stone wall building or restoration, creating boardwalks, stone pitched paths, cutting and clearing trees and scrub, weeding, plan and establish grazing, livestock movement, coppicing, bracken cutting, seeding, re-wet ting and restoring mires, ditch blocking, dam repairing

Evaluate
For meeting objectives, for improvements to upland habitat, for improvements to conservation value, for timeliness of operation, sustainability of working practices, environmental impact, use of safe working practices, cost and funding implications, skill level required, compliance with regulations, advantages and disadvantages

Methods
Livestock grazing (types of livestock, stocking rates), burning (timing, methods used, compliance with legislation), cutting (manually, use of mechanisation, timing), herbicide use (timing, legislation)
Unit 337  
Undertaking Upland Habitat Management

Notes for guidance

Upland habitats encompass a wide range of habitat types and locations, with differences seen in specific regions of the UK. This unit is designed to provide learners with an understanding of the range of upland habitats and their characteristics, together with the species they support. Learners will also gain practical skills in surveying and practical habitat management.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible and practical activities should be planned to minimise disruption to habitats and their species.

For Outcome 1 learners need to gain an overview of the different upland habitats in the UK. It is likely that delivery will be a mix of classroom activity and research, together with visits to upland habitats, either locally or through a field trip. As it is unlikely that learners will be able to visit all types of upland habitat due to their dispersed nature, it is important that visits are supplemented with audio visual material to enable learners to observe as wide a range of habitats as possible.

For Outcome 2 learners will need the opportunity to survey a range of different sites within an upland habitat. Delivery is also likely to include underpinning theory of surveying, which may be linked to other units, and needs to include how to plan a survey and analysis results as well as conducting the survey itself. Learners will also need the opportunity to practice species identification using keys and guides.

For Outcome 3 learners will need to gain an understanding of the threats to upland habitats. Delivery is likely to include study of a range of examples highlighting threats and their impact, and management strategies to mitigate and reduce the effects of the threats on the habitat. A guest speaker, such as an upland countryside ranger, could help learners to appreciate the types of management required in upland areas. Learners also need to gain an overview of the legislation protecting upland habitats, and the effect of National Park designation which covers most of the significant upland areas in England, Wales and Scotland.

For Outcome 4 learners will need supervised access to an upland habitat to carry out practical management activity. Given the careful management planning of most UK upland areas, it is important to plan this well in advance to fit with the timing planned by the land owner or managing body. The importance of health and safety should be stressed, as should the importance of minimising environmental impact through the habitat management activities. Learners will also need the opportunity to evaluate upland management activities, particularly the use of livestock grazing, or burning or cutting as a means of vegetation control.
References

Books


Websites

www.dardni.gov.uk Department of Agriculture and Rural Development (NI)
www.defra.gov.uk Department for Environment, Food and Rural Affairs
www.wales.gov.uk Welsh Assembly Government
www.scotland.gov.uk Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk Environment Agency
www.forestry.gov.uk Forestry Commission
www.jncc.gov.uk Joint Nature Conservation Committee
www.moorlandassociation.org The Moorland Association
www.nationalparks.gov.uk National Parks
www.naturalengland.org.uk Natural England
Unit 338  Understanding Archaeology and Landscape History

Level: 3
Credit value: 10

Unit aim
This unit aims to introduce learners to archaeology and landscape history and how this knowledge can be applied in practice. It is designed for learners in a centre-based setting looking to progress into the sector or onto further/higher education.

The learner will investigate how the British countryside has been used from pre-history to present day. They will learn how to ‘read’ the landscape and consider how its uses have resulted in present day habitats and landscapes. They will learn the integration of archaeological heritage conservation into current countryside management.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Know the characteristics of prehistoric earthworks and landscape features
2. Know the changing patterns of land use between the Iron Age and the beginning of parliamentary enclosures
3. Understand the transformations in British landscape from the parliamentary enclosure to the present day
4. Be able to plan site management of an archaeological site

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
n/a

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• A Centre devised assignment covering practical skills and underpinning knowledge. The procedures for creating centre devised assignments is available to download from www.cityandguilds.com
Unit 338 Understanding Archaeology and Landscape History

Outcome 1 Know the characteristics of prehistoric earthworks and landscape features

Assessment Criteria
The learner can:
1. Describe characteristics of selected prehistoric earthworks and landscape features
2. Outline the uses of selected monuments

Unit content

Prehistoric earthworks and landscape features and their uses

Neolithic  eg. Causewayed enclosures, mortuary enclosures, long barrows, cursuses, henges, avenues, stone alignments, timber and stone circles, portal tombs, passage graves, long cairns or bank barrows, court cairns, recumbent stone circles, villages, ritual landscapes, flint and stone extraction, sarsen stones.

Bronze Age  eg. Bowl, bell, disc and pond barrows, linear earthworks, field boundaries, reaves, coaxial field systems, clearance cairns, burnt mounds, settlement patterns, agricultural crops and livestock, modified landscapes, heathlands

Iron Age eg. Hillforts, raths and rounds, duns, crannogs, brochs, courtyard houses, souterrains, farmsteads, corn pits, banjo enclosures

Characteristics and possible uses of the above eg construction methods, orientation
Unit 338  Understanding Archaeology and Landscape History
Outcome 2
Know the changing patterns of land use between the Iron Age and the beginning of parliamentary enclosures

Assessment Criteria
The learner can:
1. Identify changes in patterns of land use in a selected area
2. Describe changing patterns of land use between the Iron Age and the beginning of parliamentary enclosures

Unit content

Patterns of land use between the Iron Age and the beginning of parliamentary enclosure.

Range:
Farming and husbandry eg. Roman introductions, influences of the Anglo-Saxons and Vikings cultures, the manorial system, the open field system, commons and wastes, field boundaries, crops and livestock, fish ponds, rabbit warrens, deer parks, industrial crops, strip lynchets. Monastic buildings and estates, parish churches, tythes and glebes.

Highways eg. Roman roads, holloways, droves, lanes, tracks.

Forests and woodland eg. Coppicing, assarting, wood pasture, pannage.

Rural industries eg. Extractive industries, clay, stone, salt, coal. Charcoal, lime burning, hemp and flax, wool, wind and water mills, food processing and other regionally important industries.

Military and defence eg. Motte and bailey, castles, fortified manor houses, moats.

Rural settlement patterns eg. Early farmsteads, Roman towns and forts, villas, villages, Black Death, deserted medieval settlements, market towns, dissolution of the monasteries.

Place names.
Unit 338  
Outcome 3  
Understanding Archaeology and Landscape History  
Understand the transformations in British landscape from the parliamentary enclosures to the present day

Assessment Criteria  
The learner can:
1. Explain changes in patterns of land use for a selected area from the parliamentary enclosures to the present day  
2. Discuss types of landscape and map evidence of changing patterns of land use

Unit content  

Patterns of land use from the parliamentary enclosures to the present day  

Range:  
Farming  eg. Parliamentary enclosures, effects of improved livestock breeding, effects of ownership of large estates, market gardening, high farming, model farming, changes in the dairy industry, fruit and vegetable production.

Population changes eg. Open and Close villages, decline of rural and cottage industries, social unrest, growth of cities, suburbs, industrial centres, changes in the extractive industries. Highland clearances.

Transport eg. Turnpikes, canals, railways, roads, motorways, ports and airports.

Effects of the depression from 1880- 1945

Changes post 1945 eg. Field size and hedge removal, mechanisation, land drainage, mono-culture and new crops, intensive livestock rearing, grass silage, forestry, agriscience, heathland destruction, National Parks, tourism and recreation, military installations

Changes post 1984 eg. Milk quotas, orchard removal, poly tunnels, EU subsidies, heathland regeneration, horseculture, effect of world trade on home market.

Types of landscape and map evidence of changing patterns of land use

Influences of land use eg Geology, topography, drainage pattern, land cover, historical land use, settlement, enclosure, perceptual and aesthetic values.

Map evidence eg: Geology (British Geological Survey Data (1:50,000 or 1:63,360)); Topography/Landform (Ordnance Survey Data (1:50,000 or 1: 25,000)); Soils (Soil survey Data (1:250,000)); Land cover/Vegetation (Phase 1 Habitat surveys, Natural Area Profiles (England), Natural Heritage Futures (Scotland)); Trees /Woodland (OS Data, Aerial photography, Forestry Commission woodland inventory, Historical maps); Land Use (Enclosure maps, Land cover map 2000, MAFF/DEFRA Agricultural Land Classification, Aerial photographs, OS maps, Tythe apportionment maps); Settlement Patterns (Historical maps and data, Rural Settlement Atlas (England), OS maps, Census data)
Unit 338  Understanding Archaeology and Landscape History
Outcome 4  Be able to plan site management of an archaeological site

Assessment Criteria
The learner can:
1. Use management planning techniques for a selected archaeological site
2. Explain processes and frameworks of archaeological investigation and protection

Unit content
Management planning techniques

Range:
Threats to an archaeological site eg. Ploughing, burrowing animals, trees and scrub, erosion, metal detecting, damage caused by visitors, health and safety on site. Conserving both natural and archaeological features on a site.

Planning: Setting objectives and parameters, timescales, consulting stakeholders, investigating sources of funding.

Processes and frameworks

Range
Desk top study eg. Maps and documents, National Monuments Records, Sites and Monuments Records/ Historic Environment Records, RCHME volumes, Portable Antiquities Scheme, English Heritage’s “gateway”

Non-invasive investigative techniques eg. Contour surveying, aerial photography and LIDAR, crop and soil marks, field walking, geophysical methods – resistivity, magnetrometry, magnetic susceptibility, ground penetrating radar, infra red photography.

Physical analysis eg. Carbon dating, pollen analysis, dendrochronology, plant and animal remains.

Unit 338  
Understanding Archaeology and Landscape History

Notes for guidance

This unit is designed to provide the learner with an understanding of British archaeology and landscape history. Most locations will have evidence of former uses and it is the role of the countryside manager to ensure that they are identified, recorded and protected for future generations. The unit will cover an overview of how the countryside has changed since the Neolithic period to the present day discussing the factors that have influenced those changes.

Delivery is likely to be a mixture of classroom based learning and local site visits. Additional site visits with reconstructions of buildings or lifestyles will help to reinforce underpinning knowledge. If it can be arranged, visits to local archaeological digs can be of interest, but tutors should be aware of the archaeological issues surrounding these site visits. Learners are not expected to participate in excavations, but would clearly gain from the experience if the opportunity was available, for example through a suitable work placement. The integration of site safety, environmental awareness and good practice into all site-based activities is expected.

Where practical activities are used health and safety issues relating to working in an outdoor environment must be stressed and regularly reinforced, and risk assessments must be undertaken and recorded prior to practical activities. Adequate Personal Protective Equipment (PPE) must be provided. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely.

In Outcome 1 the learner will gain an overview of prehistoric earthworks and landscape features. Classroom based study should be carried out to gain an understanding of different types of features and how these relate to the landscape. Examples should be chosen from around the country which best illustrate the prominent characteristics of that type. The evolution of different types of monuments should be discussed and an understanding of how features relate to others in the area. Possible uses should be discussed with an understanding of the difficulty of interpreting lifestyles and values of prehistoric civilisations.

Where possible visits to local sites should be undertaken to identify and compare monuments and landscape features with maps and documents from a desktop study. The desktop study research prior to the visit will link with outcome 3 and 4 in this unit.

Outcome 2 requires the learner to understand changing patterns of land use between the Iron Age and the beginning of parliamentary enclosures. The tutor should choose an area which demonstrates as many examples of land use changes as possible and these should be introduced to the learners via classroom study and site visits as in outcome 1.

Outcome 3 requires the learner to explain changes in patterns of land use for a selected area from the parliamentary enclosure to the present day. For an area consider a combination of influences and compare and contrast with a different distinct landscape types. This could be the same area as in Outcome 2 or a different area which provides suitable examples of land use changes. Site visits and class room study are recommended to introduce these features to the learner.

The class room study could include a landscape character assessment of a distinct area involving an investigation into the different landscape and map evidence available. Through this study the learners will develop an understanding of the contributions different influences have had on the landscape and its use, different landscape types and the availability and range of map evidence. This outcome links to all other outcomes in the unit.

Outcome 4 requires the learner to prepare a plan for the future management of an archaeological site. They will understand the scope of the legislation that applies to protect the archaeological features of a site.
will understand the processes and frameworks of archaeological investigation including desktop study, non-invasive investigative techniques and physical analysis. Learners will consider a range of possible threats to archaeological sites and prepare a management plan to protect a selected archaeological site.

All outcomes link with each other and so where possible one suitable site could be used for all case studies. Learners should be encouraged to visit as many sites as possible and take photographs to keep as evidence. These case studies could form the basis of the assignment.

This unit requires the assignment to be set by the Centre and approved by the External Verifier. Under QCF regulations all assessment criteria must be assessed within the assignment. Procedures for creating centre devised assignments are available on the City & Guilds website: www.cityandguilds.com

References

Books

Bowden M – *Unravelling the Landscape* (Tempus 1999) ISBN 07524 1447 X
Green M - *A Landscape Revealed 10,000 Years on a Chalkland Farm* (Tempus 2000) ISBN 0 7524 1490 9
ISBN 0 19 860619 2
Rackham O - *Ancient Woodland* (Castlepoint Press 2003) ISBN 0 897604 27 0
Renfrew C and Bahn P - *Archaeology Theories Methods and Practice* (Thames and Hudson 2000) ISBN 0 500 281475
Swanwick C - *Landscape Character Assessment Guidance for England and Scotland*. Now available via Natural England website

RCHME volumes for the respective study area
Pevsner N and Newman J - *The Buildings of England County editions*
Monographs for specific monuments or areas
Journals

British Archaeology
Current Archaeology
Landscapes

Websites

www.ads.ahds.ac.uk
www.bbc.co.uk/history/archaeology
www.britarch.ac.uk/info/uklinks.html
www.cadw.wales.gov.uk
www.english-heritage.org.uk
www.historic-scotland.gov.uk
www.regia.org/listings.htm
wwwroman-britain.org
www.ukagriculture.com/countryside/
countryside_history.cfm

Archaeology Data Service
BBC Archaeology
Council for British Archaeology
Historic environment service of the Welsh Assembly Government
English Heritage
Historic Scotland
Regia Anglorum
Roman Britain

UKAgriculture
Unit 339 Understand Greenwood Crafts

Level: 3
Credit value: 10

Unit aim
This unit aims to introduce learners to greenwood craft skills and knowledge and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes
There are four learning outcomes to this unit. The learner will be able to:
1. Know commonly produced greenwood products
2. Understand appropriate woodland management for producing wood for greenwood crafts
3. Be able to demonstrate practical techniques in greenwood crafts
4. Know the likely markets for greenwood products

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
This unit is linked to the Environmental Conservation National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• A centre-devised assignment covering practical skills and underpinning knowledge.
Unit 339 Understand Greenwood Crafts
Outcome 1 Know commonly produced greenwood products

Assessment Criteria
The learner can:
1. Identify selected greenwood products from a given locality
2. Describe the specifications of selected greenwood products

Unit content
Greenwood products
Furniture items e.g. stools, chairs, benches; garden items e.g. garden furniture, pergolas, trellis, poles, pea and bean sticks, rakes, climbing plant supports, wattle hurdles/panels; turned items e.g. bowls, platters, treen, chair spindles and legs, tool handles, garden dibbers, rounders bats, skittles, rolling pins; basketry items e.g. willow woven baskets; cleft wood baskets e.g. trugs, swill baskets; living items e.g. made from green willow, such as domes, fences/screens, sculptures, arches, walkways, arbours, tunnels, seats, revetments, riverbank strengthening; construction items e.g. posts and rails for fencing, roof shingles, constructional timbers, lathes, wattle rods, thatching spars, liggers and sways; hedge-laying items e.g. stakes and binders; tools and handles e.g. beetles, mallets, rakes, hay forks, scythe handles; other items e.g. besoms, tent pegs, thatching spars, hop poles, walking sticks, horse jumps, coracles, clogs, spoons, staves for Morris dancers

Specifications
Species and quality of timber used; age of timber used; sizes of components; greenwood product dimensions
Unit 339 Understand Greenwood Crafts
Outcome 2 Understand appropriate woodland management for producing wood for greenwood crafts

Assessment Criteria
The learner can:
1. Explain appropriate woodland management techniques used to produce suitable wood for selected greenwood products
2. Compare different woodland management techniques

Unit content
Woodland management techniques
Pure coppice, mixed coppice, coppice with standards; features of management systems; advantages and disadvantages of management systems; sustainable woodland management

Produce suitable wood
Techniques for producing greenwood: coppicing, pollarding, planting, layering, cuttings; features of techniques

Techniques for obtaining timber: felling, splitting, riving/cleaving, peeling, pointing; health and safety; personal protective equipment (PPE); current relevant legislation

Greenwood products
Species used in greenwood products: commonly used species e.g. ash, beech, oak, sycamore, sweet chestnut, elm, cherry, birch, alder, hazel, willow, lime, maple; common uses of each species; woodland potential for greenwood products

Furniture items e.g. stools, chairs, benches; garden items e.g. garden furniture, pergolas, trellis, poles, pea and bean sticks, rakes, climbing plant supports, wattle hurdles/panels; turned items e.g. bowls, platters, treen, chair spindles and legs, tool handles, garden dibbers, rounders bats, skittles, rolling pins; basketry items e.g. willow woven baskets; cleft wood baskets e.g. trugs, swill baskets; living items e.g. made from green willow, such as domes, fences/screens, sculptures, arches, walkways, arbours, tunnels, seats, revetments, riverbank strengthening; construction items e.g. posts and rails for fencing, roof shingles, constructional timbers, lathes, wattle rods, thatching spars, liggers and sways; hedge-laying items e.g. stakes and binders; tools and handles e.g. beetles, mallets, rakes, hay forks, scythe handles; other items e.g. besoms, tent pegs, thatching spars, hop poles, walking sticks, horse jumps, coracles, clogs, spoons, staves for Morris dancers
Unit 339 Understand Greenwood Crafts
Outcome 3 Be able to demonstrate practical techniques in greenwood crafts

Assessment Criteria
The learner can:
1. Produce greenwood products to meet given objectives

Unit content
Produce
Tools and equipment: safe use of a range of tools and equipment e.g. pole lathe, shaving horse, drawknife, froe, chisels, gouges, brace and bits, knives, bow saw, wedges, axes, adzes, billhooks, spoke shaves, sharpening stones, hammers, maul, clamps/cramps, loppers; maintenance of tools

Techniques for making items: e.g. turning, weaving, carving, cutting, shaping, drilling, joint construction; health and safety; personal protective equipment; level of finish.

Greenwood products
Furniture items; garden items; turned items; basketry and willow weaving items; living items; construction items; hedge-laying items; other rustic items
Unit 339  Understand Greenwood Crafts
Outcome 4  Know the likely markets for greenwood products

Assessment Criteria
The learner can:
1. Describe appropriate markets for selected greenwood products
2. Outline marketing methods for selected greenwood products

Unit content
Markets
Marketplaces: individual local retailers e.g. ‘general’ shops, specialist shops, visitor centres, craft shops, cafés and tea shops; a local event e.g. fête, craft show, open day, county/agricultural show, farmers’ market; local chain retailers e.g. garden centres, petrol stations; specialist venues e.g. craft workers’ cooperatives/guilds, sculpture/art galleries; direct sales marketplaces, e.g. internet, mail order

Customer: types of customer and their characteristics; personal customers e.g. age, sex, socio-economic group, family status, type of employment, location; business and organisational customers e.g. type of business/organisation, size, location

Marketing methods
Promotional methods appropriate to greenwood product and customer characteristics e.g. newsletters, the internet, local newspapers, radio, door to door, pamphlets, posters, postcards, products on view or on sale, approaching potential customers directly, special offers; advantages and disadvantages of marketing methods; current relevant legislation
Unit 339 Understand Greenwood Crafts

Notes for guidance

This unit is designed to combine the practical skills and knowledge of greenwood products and production methods with an understanding of how these products are marketed. Learners need to investigate the development of sustainable management techniques necessary to produce wood for greenwood products.

This unit should be delivered in a practical context wherever possible and for certain parts of the unit this is essential. Visits to commercial woodlands, engaging with local practitioners such as thatcher’s, charcoal producers and willow weavers, visits to craft fairs and living museums, will enhance learner experience.

The nature of greenwood management and production is seasonal and care must be taken to ensure that tasks and activities are integrated within natural cycles.

Health and safety issues relating to making greenwood crafts must be stressed and reinforced regularly, and risk assessments must be undertaken before any practical activities. Adequate PPE must be provided and used following the production of suitable risk assessments.

In Outcome 1 learners will need to develop familiarity with the range of greenwood products that are, and have been, produced from British woodlands. Learners will be able to observe these first hand through visits to producers, craftspeople, points of sale or museum or similar exhibitions. Illustrated lectures and handouts, videos and similar resources would suffice. Learners will need to know which types and dimensions of timber are most useful for the manufacture of greenwood products.

In Outcome 2 Learners will look at the woodland species appropriate for greenwood products, their identification and management. The common uses of each species will also need to be explored. Site visits to woodlands to identify these species in their natural habitats is important. Learners will also need to know the different management techniques used to produce greenwood and how these can be applied to woodlands and a greenwood crop (a focus on sustainable cropping, should also be covered).

Learners should be made aware of the range of legislation affecting woodland work.

In Outcome 3 covers the practical techniques used to make greenwood products. Delivery will need to focus on the safe use of various tools as well as the various techniques for obtaining usable timber and transforming it into greenwood products. Learners will need to understand the health and safety issues arising from greenwood work, particularly the hazards and risks involved. The use of appropriate PPE will form an integral part of this unit, as well as demonstrations by tutors or craftspeople, followed by sufficient supervised practice time for learners to develop their competence.

In Outcome 4, learners need to look at the markets suitable for greenwood products, understand the features and characteristics of their customers and the likely places where customers are to be found. Learners must be aware of the methods used to advertise products to potential customers along with their advantages and disadvantages. Where possible, examples of advertising for greenwood products should be used to assist delivery.

Learners will need access to woodland that offers a variety of species and management techniques relevant to the study of greenwood products and production. They must have access to woodland to observe and practise relevant management techniques as well as produce artefacts. Learners will also need tools and equipment relevant to the products they are required to make and adequate workshop facilities. Learners will need to have suitable PPE.
References
Milner E – *The Tree Book* (Collins and Brown, 1992) ISBN 1855851326

Websites
www.btcv.org.uk British Trust for Conservation Volunteers
www.bodgers.org.uk
www.coppice-products.co.uk
www.forestry.gov.uk Forestry Commission
www.smallwoods.org.uk Promoting and supporting the wellbeing of small woods in the UK
www.woodsmithstore.co.uk The Woodsmith’s Store
Unit 340 Undertake Gamebird Production

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills used in and understanding of gamebird production and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Understand management of reared gamebirds
2. Know how incubation is organised
3. Be able to operate an incubator/hatcher to produce day old chicks
4. Be able to rear gamebirds from day-old to poultry stage

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Gamekeeping National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
• A centre-devised assignment covering practical skills and underpinning knowledge.
Unit 340  Undertake Gamebird Production
Outcome 1  Understand management of reared gamebirds

Assessment Criteria
The learner can:
1. explain the establishment and maintenance of a gamebird production programme
2. explain management of factors that affect the health and welfare of selected reared gamebirds
3. assess operations carried out recommending improvements

Unit content
Establishment and maintenance of a gamebird production programme
Assess shoot day numbers and bag requirements, numbers and sizes of release pens, calculate an estimation of required birds

Factors that affect health and welfare
Diseases common to gamebirds, the affects of stress leading to behavioural disorders, the requirements at different stages of growth

Signs of health and welfare: changes in feed and water consumption, external symptoms including high mortality rates, normal and abnormal behaviour e.g. lethargy, ruffled/fluffed feathers. The recognition of normal internal organs

Operations carried out recommending improvements
Bio security measures: use of disinfectants, exclusion of wild birds, change of ground and the isolation of sick birds. Planning and methods of disease transmission and barriers to transmission, stocking density, care of equipment i.e. feeders and drinkers. Bitting of birds beaks, pecking reduction measures
Unit 340  Undertake Gamebird Production
Outcome 2  Know how incubation is organised

Assessment Criteria
The learner can:
1. describe commonly used methods for obtaining gamebird eggs for incubation
2. outline requirements of breeding stock
3. plan hatchery operations to meet given objectives covering:
   a. egg preparation
   b. egg incubation
   c. egg hatching
   d. despatch of deformed chicks
   e. boxing of day-old chicks

Unit content

Commonly used methods for obtaining gamebird eggs for incubation
Sources of eggs and breeding stock: Buying in eggs, breeding behaviour, operation of a closed flock, sexing and identification of breeding stock, advantages and disadvantages of both systems and the cost variations, relevant up to date legislation.

Requirements of breeding stock
Welfare considerations (i.e. prevention of fighting, treading damage reduction, stock density), sex ratio suitability, normal behaviour (i.e. food consumption, egg production), signs of stress (i.e. reduced egg production and appetite). The factors that affect fertility and hatchability of eggs (i.e. cleanliness of pens stock and egg eating by stock and pest birds). Timeliness of egg collection, fertility of stock birds and storage conditions

Communal pen types i.e. movable harem, pair boxes and their specifications. Recording systems, paper and electronic based, egg handling and collection techniques, health and safety and P.P.E including relevant up to date legislation

Egg preparation
Collection times for eggs, sanitizing and disinfecting, storage of cleaned eggs, temperature control

Egg incubation
Bringing eggs up to temperature prior to incubation, setting eggs in incubation trays, creating an egg incubation records

Egg hatching
Transfer of eggs into hatching trays, create hatching record chart

Despatch of deformed chicks
Types of humane despatch and disposal of chicks, recognition of deformities

Boxing of day-old chicks
Count and box chicks into appropriate containers for transport
Unit 340  Undertake Gamebird Production
Outcome 3  Be able to operate an incubator/hatcher to produce day old chicks

Assessment Criteria
The learner can:
1. safely carry out incubation of gamebird eggs to meet given objectives
2. safely use incubation equipment to meet given objectives
3. adapt operations to meet factors which affect incubation

Unit content

Incubation of gamebird eggs
Incubation specifications to include suitability in grading eggs for size, damage, cleanliness. Sanitising procedures i.e. disinfecting, fogging and washing, condition required to maintain viability of eggs i.e. humidity, temperature and time

Requirements for successful incubation for both embryonic development and hatching i.e. temperature, time, turning, humidity and automatic versus manual machines. Types of incubators i.e. broody hens, electronic hatchers

Incubation equipment
Incubators, hatchers, egg monitoring equipment, temperature and humidity control equipment

Factors affecting incubation
Methods in maintaining and monitoring the incubation environment i.e. candling, weighing eggs, thermometers including wet and dry bulb types digital data loggers. Fertility confirmation methods and embryo development methods i.e. candling, weighing of eggs. Appropriate methods of recording information. Health and Safety, Personal Protective Equipment and relevant up to date legislation
Unit 340

Undertake Gamebird Production

Outcome 4
Be able to rear gamebirds from day-old to poultry stage

Assessment Criteria

The learner can:

1. ensure welfare of chicks is maintained
2. maintain gamebird production to meet given objectives
3. adapt operations to meet factors which affect production

Unit content

Welfare of chicks is maintained
Stock Management: provide suitable area for maintaining chick condition i.e. temperature, water, food.

Environmental Needs: resources required at each stage of chick development i.e. temperature, water, food stress reduction; importance of maintaining these requirements.

Factors affecting production
Common disorders associated with gamebirds and methods of dealing with them, gapes, coccidiosis, appropriate methods of recording information, Health and Safety, Personal Protective Equipment and relevant up to date legislation to include mortality records and medication records and associated codes of practice.
Unit 340  Undertake Gamebird Production

Notes for guidance

Delivery of this unit can involve practical assessments, written assessment, visits to suitable collections and will link to work experience placements.

Whichever methods that are used, it is essential that tutors highlight the current relevant industry codes of practice to ensure that these are understood and followed. Tutors must stress the importance of animal welfare, sound environmental management and the need to manage the resource to comply with current legislation.

Health and safety issues relating to gamebird rearing must be stressed and reinforced regularly and risk assessments must be undertaken before any practical activities. Adequate Personal Protective Equipment must be provided and used following the production of suitable risk assessments.

Tutors could consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study.

Learning outcomes 1 and 2 require learners to become familiar with a range of techniques. These are likely to be delivered through formal lectures, discussion, site visits, practical's and independent learner research.

Site visits would enable learners to witness the use of a variety of techniques at first hand. These would ideally include a range of small-scale to large-scale operations. Visiting expert speakers could add to the relevance of the subject. For example, a game farm manager or gamekeeper could talk about their work, the situations they face and the methods that they use.

Learning outcomes 3 and 4 require learners to be involved in the incubation and rearing of a batch of gamebirds. This could form a group project where small groups of learners are given the responsibility for rearing a batch of poults from hatching eggs to the six-week stage. Delivery methods should be varied and should include formal lectures, demonstrations, supervised practical instruction and visits to examine commercial practices. Visiting expert speakers could add to the relevance of the subject. For example, a game farm manager or gamekeeper could talk about their production strategies and how they maintain a safe working environment.
Unit 341  Understanding Water Quality

Level: 3
Credit value: 10

Unit aim
This unit aims to introduce learners to skills and knowledge associated with water quality and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Understand the factors, physical, chemical and biological, which influence water quality and aquatic species
2. Be able to measure basic water quality factors
3. Be able to record and interpret water quality data
4. Understand the principles of water treatment

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
This unit is linked to the Environmental Conservation National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• A centre-devised assignment covering practical skills and underpinning knowledge.
Unit 341  Understanding Water Quality
Outcome 1  Understand the factors, physical, chemical and biological, which influence water quality and aquatic species

Assessment Criteria
The learner can:
1. explain the hydrological cycle
2. explain how the physical environment can change water quality
3. explain how an aquatic habitats flora and fauna changes when water quality changes
**Unit 341 Understanding Water Quality**

**Outcome 2** Be able to measure basic water quality factors

**Assessment Criteria**

The learner can:

1. determine the basic water quality of a given aquatic habitat
2. carry out basic biological sampling for a given aquatic habitat
Unit 341  
Understanding Water Quality  
Outcome 3  
Be able to record and interpret water quality data

Assessment Criteria

The learner can:
1. Carry out a water quality survey on an aquatic habitat for a given period
2. Produce a report on the water quality of a given aquatic habitat
Unit 341  Understanding Water Quality
Outcome 4  Understand the principles of water treatment

Assessment Criteria
The learner can:
1. discuss the methods of water treatment commonly used to meet specified objectives
2. assess water treatment methods commonly used to meet specified objectives
3. explain how commonly used water treatment methods satisfy current legislation
Unit 342  Understanding Captive Deer Herd Management

Level: 3
Credit value: 10

Unit aim

This unit aims to introduce learners to captive deer herd management skills and understanding and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes
There are four learning outcomes to this unit. The learner will:
1. Know the biology, ecology and behaviour of deer in a captive environment
2. Be able to plan deer production and record keeping systems
3. Understand captive deer nutritional requirements
4. Know the humane capture, handling and culling of deer

Guided learning hours
It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
This unit is linked to the Gamekeeping National Occupational Standards

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
• A centre-devised assignment covering practical skills and underpinning knowledge.
Unit 342  Understanding Captive Deer Herd Management
Outcome 1  Know the biology, ecology and behaviour of deer in a captive environment

Assessment Criteria
The learner can:
1. compare deer biology with that of given domesticated livestock
2. compare deer ecology with that of given domesticated stock
3. compare deer behaviour with that of given domesticated stock
Unit 342  Understanding Captive Deer Herd Management
Outcome 2  Be able to plan deer production and record keeping systems

Assessment Criteria
The learner can:
1. carry out deer production planning
2. plan deer production record keeping systems
Unit 342  
Understanding Captive Deer Herd Management
Outcome 3  
Understand captive deer nutritional requirements

Assessment Criteria
The learner can:
1. discuss deer nutritional requirements
2. explain how and why deer nutritional requirements change throughout the production cycle
3. outline how the nutritional requirements of deer are met in a captive environment
Unit 342 Understanding Captive Deer Herd Management
Outcome 4 Know the humane capture, handling and culling of deer

Assessment Criteria
The learner can:
1. plan humane culling, capture and handling of deer
2. describe deer production planning carried out
3. outline legislation relevant to the culling and handling of captive deer
Unit 343  Undertaking Commercial Deer Management

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills and knowledge in the management of commercial deer operations and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Know how to arrange third party deer stalking
2. Understand how to plan commercial activities within a business framework
3. Be able to facilitate safe and humane third party deer culling
4. Be able to prepare by-products to meet client requirements

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Gamekeeping National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.
Unit 343  
**Undertaking Commercial Deer Management**

**Outcome 1**  
Know how to arrange third party deer stalking

**Assessment Criteria**

The learner can:

1. describe requirements of clients in a given visit scenarios
2. outline safety and legal considerations
3. plan third party deer stalking
Unit 343  
Outcome 2  

**Undertaking Commercial Deer Management**  
Understand how to plan commercial activities within a business framework

**Assessment Criteria**

The learner can:

1. explain financial aspects of a third party deer stalking activity
2. compare contractual requirements of different commercial deer stalking scenarios
Unit 343 Undertaking Commercial Deer Management
Outcome 3 Be able to facilitate safe and humane third party deer culling

Assessment Criteria
The learner can:
1. lead a client in a safe and humane commercial deer stalk
2. describe responsibilities of a lead stalker
**Unit 343**  
**Undertaking Commercial Deer Management**  
Outcome 4  
Be able to prepare by-products to meet client requirements

**Assessment Criteria**
The learner can:
1. safely process and present a deer by-product to meet given objectives
2. describe the process of by-product preparation from the time of culling through to presentation to client
Unit 344  Understanding Countryside Tourism and Recreation

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills and knowledge used in countryside tourism and recreation, and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes

There are five learning outcomes to this unit. The learner will:
1. Understand reasons for countryside tourism and recreation
2. Understand factors affecting countryside tourism and recreation
3. Understand tourism/recreation factors affecting the countryside
4. Know the roles of organisations involved in countryside tourism and recreation
5. Be able to monitor and report on environmental conditions of tourist/recreation sites

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Environmental Conservation National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
- A centre-devised assignment covering practical skills and underpinning knowledge.
Unit 344 Understanding Countryside Tourism and Recreation
Outcome 1 Understand reasons for countryside tourism and recreation

Assessment Criteria
The learner can:
1. assess needs of countryside tourism and recreational visitors
2. explain tourist and recreational attractions of the countryside [IE1, IE3, IE4]
Unit 344 Understanding Countryside Tourism and Recreation
Outcome 2 Understand factors affecting countryside tourism and recreation

Assessment Criteria
The learner can:
1. explain factors that affect countryside tourism and recreation
2. discuss the changing demand of tourism and recreation in the countryside
Unit 344 Understanding Countryside Tourism and Recreation
Outcome 3 Understand tourism/recreation factors affecting the countryside

Assessment Criteria
The learner can:
1. evaluate advantages and disadvantages of countryside tourism and recreation
2. explain the impact of countryside tourism and recreation for a given area
Unit 344  Understanding Countryside Tourism and Recreation
Outcome 4  Know the roles of organisations involved in countryside tourism and recreation

Assessment Criteria
The learner can:
1. describe the roles of organisations involved in countryside tourism and recreation
2. outline the relationship between organisations involved in countryside tourism and recreation
Unit 344  Understanding Countryside Tourism and Recreation
Outcome 5  Be able to monitor and report on environmental conditions of tourist/recreation sites

Assessment Criteria
The learner can:
1. select appropriate monitoring indicators
2. safely monitor and record data of a given tourist/recreation site
3. report monitoring findings and make recommendations
Unit 345  Understanding Fishery Management

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to fishery skills and management and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes

There are four learning outcomes to this unit. The learner will:
1. Know the main mammal and avian predators of fish and the methods used to legally control them
2. Know commonly used freshwater fish stock maintenance and improvement methods
3. Be able to use suitable methods of sport fishery bank maintenance, stock assessment and vegetation control
4. Understand the basic business requirements of a sport fishery

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Fisheries National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:
- A centre-devised assignment covering practical skills and underpinning knowledge.
Unit 345  Understanding Fishery Management
Outcome 1  Know the main mammal and avian predators of fish and the methods used to legally control them

Assessment Criteria
The learner can:
1. Identify the main avian predators of fish at a selected sport fishery
2. Identify the main mammal predators of fish at a selected sport fishery
Unit 345  Understanding Fishery Management
Outcome 2  Know commonly used freshwater fish stock maintenance and improvement methods

Assessment Criteria
The learner can:
1. explain factors involved in the maintenance improvement of selected sport fishery stock
2. explain factors involved in the improvement of selected sport fishery stock
Unit 345 Understanding Fishery Management
Outcome 3
Be able to use suitable methods of sport fishery bank maintenance, stock assessment and vegetation control

Assessment Criteria
The learner can:
1. safely carry out practical bank maintenance
2. safely carry out fish stock assessment
3. safely carry out practical vegetation control
Unit 345 Understanding Fishery Management
Outcome 4 Understand the basic business requirements of a sport fishery

Assessment Criteria
The learner can:
1. explain major factors that influence the financial viability of a given sport fishery business
2. discuss the management of a given sport fishery
Relationships to other qualifications

Literacy, language, numeracy and ICT skills development

These qualifications include opportunities to develop and practise many of the skills and techniques required for success in the following qualifications:

- Functional Skills (England) – see www.cityandguilds.com/functionalskills
- Essential Skills (Northern Ireland) – see www.cityandguilds.com/essentialskillsni
- Essential Skills Wales - www.cityandguilds.com/esw

There might also be opportunities to develop skills and/or portfolio evidence if learners are completing any Key Skills alongside these qualifications.
Appendix 1   Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the Centre Guide – Delivering International Qualifications contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve ‘approved centre’ status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of learners
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Providing City & Guilds qualifications – a guide to centre and qualification approval contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve ‘approved centre’ status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of learners
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Ensuring quality contains updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document contains information on:

- Management systems
- Maintaining records
- Assessment
- Internal verification and quality assurance
- External verification.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for learners who are eligible for adjustments in assessment.

The centre homepage section of the City & Guilds website also contains useful information such on such things as:
• **Walled Garden**
  Find out how to register and certificate learners on line

• **Qualifications and Credit Framework (QCF)**
  Contains general guidance about the QCF and how qualifications will change, as well as information on the IT systems needed and FAQs

• **Events**
  Contains dates and information on the latest Centre events

• **Online assessment**
  Contains information on how to register for GOLA assessments.
##有用联系方式

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<thead>
<tr>
<th>类型</th>
<th>联系方式</th>
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| UK学员    | T: +44 (0)84 4543 0033  
            | E: learnersupport@cityandguilds.com     |  •  一般资格信息        |
| 中心      | T: +44 (0)84 4543 0000  
            | F: +44 (0)20 7294 2413  
            | E: centresupport@cityandguilds.com |  •  考试安排  
            |                                             |  •  注册/登记  
            |                                             |  •  证书  
            |                                             |  •  发票  
            |                                             |  •  考试材料丢失或迟到  
            |                                             |  •  名册报告  
            |                                             |  •  结果    |
| 活墙花园  | T: +44 (0)84 4543 0000  
            | F: +44 (0)20 7294 2405  
            | E: walledgarden@cityandguilds.com |  •  重新发放密码或用户名  
            |                                             |  •  技术问题    |
| 雇主      | T: +44 (0)121 503 8993  
            | E: business_unit@cityandguilds.com         |  •  雇主解决方案  
            |                                             |  •  映射    |
|           |                                             |  •  认证    |
|           |                                             |  •  开发技能培训    |
|           |                                             |  •  咨询    |

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